Storm Water Management Plan

Missouri Department of Transportation

Permit covers: 2021-2026

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Contents

Introduction

The Missouri Department of Transportation (MoDOT) developed its first Storm Water Management Plan (SWMP) in July 2006.

The SWMP summarizes MoDOT's intentions to reduce the amount of pollution in storm water runoff from MoDOT's road system by addressing the six categories of concern listed in the TS4 General permit. These categories are as follows:

Public Education and Outreach

Public Involvement and Participation

Illicit Discharge Detection and Elimination

Construction Site Runoff Control

Post-Construction Site Runoff Control

Pollution Prevention/Good House Keeping

As circumstances change, new solutions may be necessary to better control pollution in storm water that flows onto or away from MoDOT's road system. This plan is a continuation in which new and innovative ideas and solutions can be developed in the years to come to protect the water quality of the state's waterways.

MoDOT's TS4 coverage area is a combination of Urbanized Areas, and regulated MS4s not located in Urbanized areas, (Exhibit 1).

Included in this stormwater management plan are actions with measurable goals and iterative process for evaluation of each action and measurable goal, helping MoDOT track and achieve the goals of the SWMP.

Throughout the SWMP are references to MoDOT's policies and procedures with links to those sites. An appendix is available to the SWMP with those documents upon request.

MoDOT Information

Name of Responsible Public Entity:	Missouri Department of Transportation
Name of Person Responsible for the SWMP:	Brian Williams
TS4 coverage area:	In regulated MS4 areas not located in Urbanized Areas as defined by MDNR and Urbanized Areas.

MoDOT is identified as the continuing authority within MoDOT right of way and properties owned by the Missouri Highways and Transportation Department.

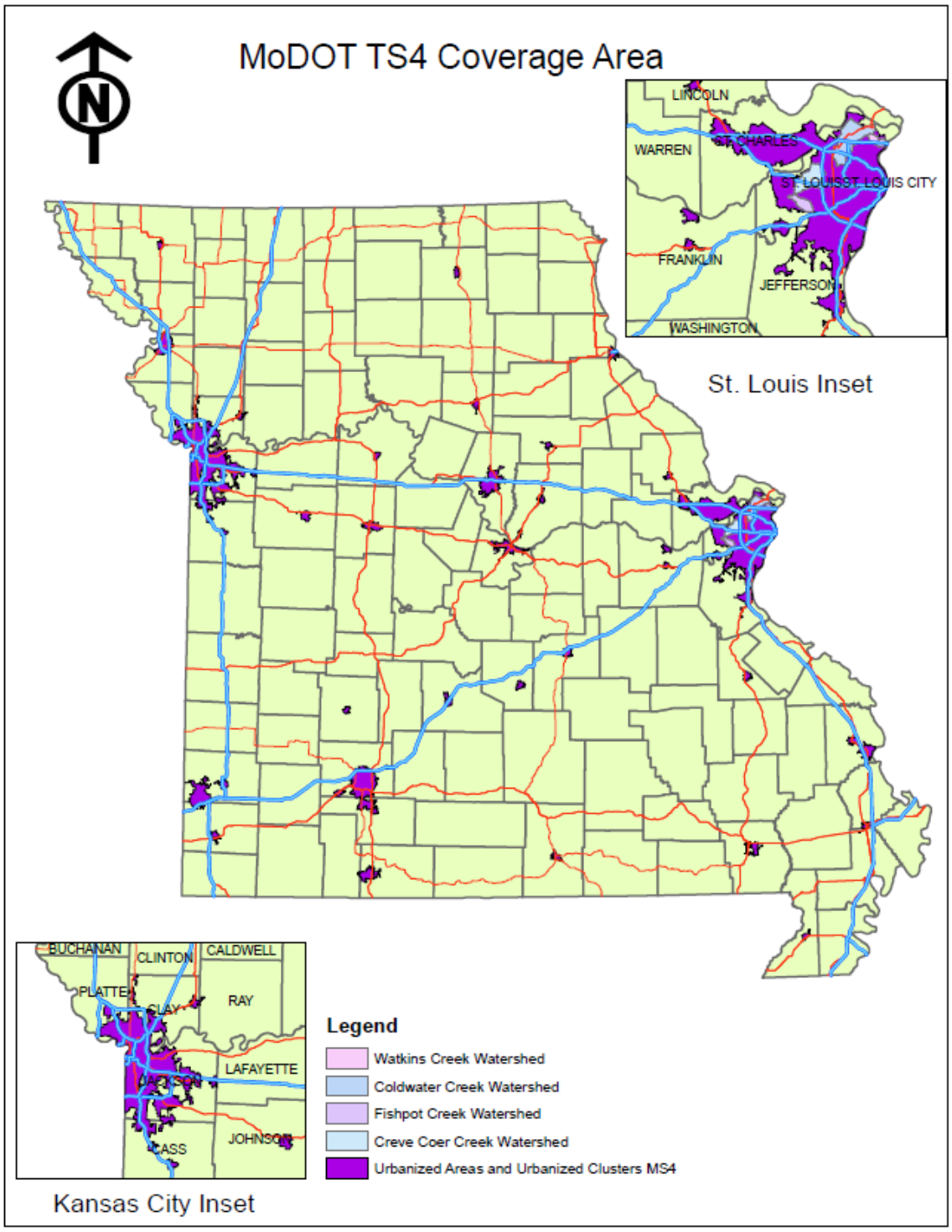


Exhibit 1: Map showing state of Missouri, TS4 area, and major highways.

Total Maximum Daily Load (TMDL) Assumptions and Requirement Attainment Plan (ARAP)

Waters identified as impaired, through an EPA approved TMDL assign a waste load allocation to identified permit holders within the watershed if their operations have the potential to significantly increase the identified pollutant through storm water discharges from their facilities.

MoDOT is currently named in four TMDLs with an applicable waste load allocation:

Coldwater Creek	Fishpot Creek
Creve Coeur	Watkins Creek

Because MoDOT is named in these TMDLs, an ARAP is required to outline best management practices implemented to ensure attainment of the applicable waste load allocations assigned in the TMDL. MoDOT submitted a "No Additional Controls" ARAP (Appendix T) to DNR on January 17, 2017. DNR approve the ARAP on March 9, 2017.

Evaluation of the approved ARAP will be conducted on an annual basis, as obligated by the permit. and documented in the annual report submitted to DNR.

Public Education and Outreach

The purpose of this minimum control measure is to educate the target audience on the importance of eliminating pollutants within our environment that effect water quality. Education is the first step in facilitating cultural change in pollution prevention and overall environmental stewardship. MoDOT uses several different media outlets to promote strategies, called best management practices (BMPs). MoDOT focuses communication efforts toward the target audiences that can affect change by implementation of BMPs within their work environment as well as their personal lives. The internal audience targeted is comprised of those involved with the development and implementation of the BMPs, as well as those who are engaged in the day-to-day operations in the field where BMPs outlined in this SWMP are tested and evaluated on a daily basis. The external audience targeted represents those who do not engage in SWMP implementation but can contribute to pollution prevention and improved water quality through shared information regarding MoDOT facilities as well as self-awareness of personal conduct to promote clean water.

MoDOT's Public Education and Outreach (PEO) strategy is intended to educate, train, and promote public involvement in operations where water quality may be affected. The PEO strategy is accomplished through engagement with the target audience through media outlets identified in the PEO BMP and supported by the PEO measurable goals.

The evaluation of each Measurable Goal (MG) will be documented in a table format for each goal. The tables will follow the same general format shown below:

Measurable Goal:	**Purpose Statement**	**Annual Performance**
Intended Outcome		
Progress		

The systematic evaluation of each measurable goal annually will allow effective assessment of the measurable goal's progress toward meeting the intended outcome.

PEO BMP1:
MoDOT will educate the target audience on storm water issues primarily related to sediment and litter as it relates to the state's highway system through training, public meetings, public events, website, email and use of media and materials. MoDOT will evaluate the effectiveness of the BMP through systematic evaluation of each measurable goal annually.

Measurable Goal 1a	MoDOT will track how many visitors have used our storm water webpage (www.modot.org/stormwater) (Appendix A) and content on the webpage each year and continually update the page with the best available information on MoDOT's role as a TS4	
Purpose Statement	The world wide web allows for reaching an untold number of audiences by providing a 24-7, 365 days a year platform to educate and receive feedback from the public on stormwater issues.	
Intended Outcome	The intended outcome is to draw visitors to the site for educational purposes as well as provide an avenue for the public to identify stormwater issues they observe in their areas. Assessments will be evaluated on an annual basis with an intended positive trend through the permit cycle. Trends will be used to evaluate the usefulness of material included on the site.	**Annual Performance**
• Visitors to MoDOT's Stormwater web page • Stormwater Brochure viewings • TS4 Permit viewings • The SMP viewings • The snow removal fact sheet		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1b	MoDOT will track how many stormwater brochures (Appendix C) are disseminated each year statewide	
Purpose Statement	Stormwater brochures provide a tangible item the target audience can read and review at their own leisure. The brochure allows for MoDOT to pack a lot of information into a small area.	
Intended Outcome	The intended outcome is to disseminate as many stormwater brochures as possible statewide. This measure will be evaluated on an annual basis with an intended target to disseminate a minimum of 400 stormwater brochures each year.	**Annual Performance**
• How many brochures were distributed?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1c	MoDOT will track and report on education components related to litter prevention through its participation in No MOre Trash events statewide and other media outlets.	
Purpose Statement	Promotion and educational efforts of the No MOre Trash campaign assist with clean-up, education, and prevention programs in Missouri. This is a multi-agency effort to protect not only clean water but wildlife and forestry resources in the state.	
Intended Outcome	The intended outcome is to get as many people included in the No MOre Trash events as well as continued efforts at the Natural Resource Conference. This measure will be evaluated annually with a target of a minimum of 100 educational events and 10,000 bags of trash collected.	**Annual Performance**
• How many No MOre Trash Bash campaign educational events were conducted and how many bags of trash were picked up. • Natural Resource Conference Booth		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1d	MoDOT will participate in education and outreach events to promote water quality and environmental compliance. MoDOT will track participation in these events.	
Purpose Statement	Participation in educational events like guest speaking at Mizzou, Earth Day and the State Fair provide a great platform for sharing how the target audience can assist with efforts to improve water quality through their daily actions.	
Intended Outcome	The intended outcome is to staff these events each year. This measurable goal will be evaluated annually for participation in these events.	**Annual Performance**
• What events were attended and how many days?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PEO BMP 2:
MoDOT will continue to promote public awareness campaigns through the website, social media, and other media outlets.

Measurable Goal 2a	MoDOT will report annually the number of media campaigns used to promote public awareness of permit elements.	
Purpose Statement	The purpose of tracking this measurable goal is to document MoDOT's efforts to inform and educate the target audience of the permit elements and how they can assist with efforts to reach the intended goal.	
Intended Outcome	The intended outcome is to utilize available media outlets at least once a year to promote media campaigns.	**Annual Performance**
Media outlets used to promote campaigns: • News Releases • Social Media posts • Internal Publications		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PUBLIC INVOLVEMENT AND PARTICIPATION

The intent of this minimum control measure is to engage the target audience to provide opportunities for community involvement and oversight of permit elements. MoDOT embraces the public involvement concept. Public involvement and participation (PIP) is a key element of the project development process for transportation projects. Engaging the target audience's involvement and participation promotes buy-in of critical concepts that support the end goal.

MoDOT uses various tools and techniques to engage public involvement and participation. These tools and techniques are implemented on statewide and local jurisdictional levels through the department's community relations office located at the Central Office in Jefferson City as well as the department's seven district offices at the local level. MoDOT's policy regarding public involvement and stormwater can be found in the EPG Section 129 (Appendix D).

MoDOT developed a stakeholder notification tool in 2021 to assist with notifications to interested stakeholders regarding public comment opportunities and educational notices for MoDOT's stormwater program. The tool allows users to sign up to receive email notifications about opportunities to interact with MoDOT and allow users to respond back to MoDOT. .

PIP BMP 1:
MoDOT will promote public involvement by posting TS4 Stormwater Management Plan (SWMP) changes and permit renewal applications on the Stormwater public web page for a minimum 10-day comment period.

<table>
<tr><td>Measurable Goal 1a</td><td colspan="2">MoDOT will engage the target audience for input regarding changes to the permit SWMP and permit applications.</td></tr>
<tr><td>Purpose Statement</td><td colspan="2">Public involvement in decision making assists the department with understanding existing issues facing the target audience and allows for consideration of those concerns in development of policies and procedures that will affect the end goal.</td></tr>
<tr><td>Intended Outcome</td><td>MoDOT will post changes to the SWMP and any permit applications to the stormwater web page a minimum of 10 days prior to submittal. MoDOT will track each occurrence. This measurable goal will be evaluated on an annual basis with an intended goal to post at least one SWMP change and 4 annual report postings per permit cycle.</td><td>Annual Performance</td></tr>
<tr><td colspan="2">Changes to the SWMP posting.
Annual Report postings</td><td></td></tr>
<tr><td>Progress</td><td colspan="2">Satisfied: Yes:☐ No:☐</td></tr>
</table>

PIP BMP2:
MoDOT will respond to public comments, questions and concerns on water quality issues related to storm water management as it relates to expansion or operation and maintenance of the state's highway system sent to the dedicated email address stormwater@modot.mo.gov email address.

Measurable Goal 1b	MoDOT will track use of its stormwater email (stormwater@modot.mo.gov).	
Purpose Statement	Email provides a consistently available, portable, cost effective way to communicate with the public. Providing a dedicated email address for stormwater issues provides a dedicated repository for correspondence.	
Intended Outcome	The intended outcome is to communicate any questions or concerns regarding stormwater. Evaluation of this measurable goal will be conducted on a yearly basis with a target of 100 percent response rate to concerns or questions.	**Annual Performance**
• What percent of emails received were responded to through the stormwater@modot.mo.gov address?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PIP BMP 3:
MoDOT will continue a program to facilitate the reporting of SPCC spills, stormwater concerns, and illicit discharges, including dumping, by providing a venue for the public and the MoDOT community to submit concerns to MoDOT.

Measurable Goal 3a	MoDOT will report how many visitors have submitted the "Report a Stormwater Concern" form and how many of those were related to permit components on MoDOT right-of-way or facilities.	
Purpose Statement	Involvement of the public in reporting stormwater related concerns promotes public awareness and engagement in protecting and promoting clean water.	
Intended Outcome	The intended outcome is to encourage as many reports be submitted as possible. This approach allows for improved reporting potential even with the reduced department staff. Assessments will be evaluated on an annual basis with an intended positive trend through the permit cycle.	**Annual Performance**
• How many Report a Stormwater Concern forms were received? • How many submitted reports were related to permit components?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 3b	MoDOT will report how many spill prevention control and countermeasure reports (SPCC) (Appendix E) came from internal personnel or other methods	
Purpose Statement	The purpose of tracking this measurable goal is to document how well the MoDOT community understands its role related to achieving the intended goal.	
Intended Outcome	The intended outcome is to document reportable SPCC spills, and illicit discharges identified by the MoDOT community. Assessments will be evaluated on an annual basis with an intended outcome of 100% of reportable spills identified at MoDOT facilities.	**Annual Performance**
• How many internal spill prevention control, and countermeasure reports came from internal personnel or other methods were received?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PIP BMP 4:
MoDOT will continue to coordinate with other MS4 communities when appropriate including the Hinkson Creek Collaborative Adaptive Management (CAM) -Action Team, St. Louis MSD, etc.

Measurable Goal 4a	MoDOT will report annually how many times MoDOT collaborated with other MS4s.	
Purpose Statement	Collaboration with other MS4 entities encourages coordination and cooperation between adjacent communities with like goals.	
Intended Outcome	The intended outcome is to continue to collaborate with other MS4 communities. Evaluation of this goal will be conducted on an annual basis with and intended goal of at least 4 contacts per year	**Annual Performance**
Collaboration instances: • CAM MS4 • St Louis MSD • Project Specific Coordination (Through RES Process)		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Illicit Discharge Detection and Elimination (IDDE)

The intent of this minimum control measure is to develop a program to identify and remove illicit discharges that occur statewide on MoDOT's system. Within this program, detection and elimination requires an element of training to educate MoDOT employees on proper

management and disposal of toxic materials or illicit discharges discovered on the right of way. The training is conducted annually for maintenance employees either as full training or refresher training.

Outfalls

As a minimum requirement of the permit, MoDOT maintains a stormwater outfall database, with mapping capabilities, to document all outfalls locations of all receiving waters that receive discharges from the TS4 area. These mapped locations vary from drainage ditches, to bridge or culvert outfalls, as well as bridge drains that allow runoff directly into the receiving water body.

MoDOT's database utilizes GIS data to provide a UTM point where outfalls intersect a Water of the State. Waters of the State are determined to be those streams within the state or forming a boundary of the state which are not entirely confined and located completely upon lands controlled by one or more persons. Where bridges cross Waters of the State and have more than one bridge drain constructed in the deck surface, one location in the center of the bridge is taken to account for the many. If other outfalls are located at the bridge in the form of ditches, those are taken as separate outfalls. UTM locations as well as a map with outfalls and receiving waters can be provided upon request.

MoDOT outfalls are inspected as part of normal activities and routine bridge inspections. Location and inspection information is maintained in MoDOT's Transportation Management System (TMS) database.

Website

MoDOT developed and launched an illicit discharge web page in February of 2021. The webpage is an education and resource component for MoDOT's MCM 3, Illicit Discharge Detection and Elimination program. It outlines the definition of an illicit discharge, it provides a link to the "Report a Stormwater Concern Form," it contains an interactive map of MoDOT's outfalls, as well as a link to MoDOT's illicit discharge pamphlet and county health department contacts by district. The web page can be found at www.modot.org/illicit-discharge-detection-and-elimination. .

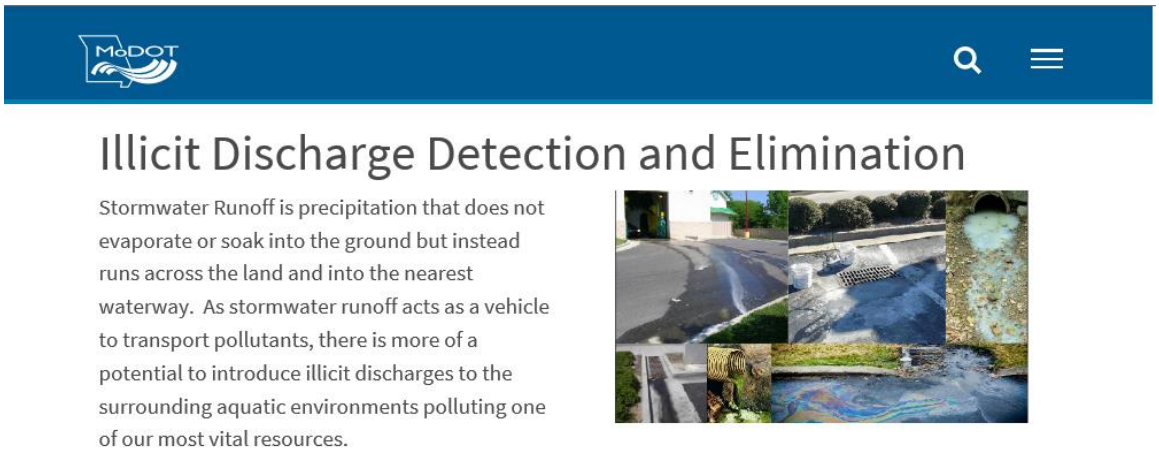


Figure 2: MoDOT's Illicit Discharge Detection and Elimination web page.

Discovery of IDDE's

MoDOT currently has a process in place to detect and eliminate illicit discharges but does not possess the legal authority under state law to prevent illicit discharges and improper disposal of waste or wastewater. Case law has, in fact, established precedent in this area. Therefore, as part of that process, an unpermitted discharge is referred to the appropriate regulatory authority for follow-up. MoDOT will perform a preliminary investigation of any illicit discharges, to the extent allowed by MoDOT's authority, prior to notifying the existing regulatory authority.

MoDOT's policy, under the Engineering Policy Guide (EPG) 127.25.8.3, (Appendix F) outlines how discoveries of illegal effluents will be handled. MoDOT will contact the local departments of health when the presence of wastewater is present or the Missouri Department of Natural Resources for all other discharges.

Public reporting of the presence of illicit discharges or water quality impacts associated with storm water discharges is possible by contacting any of MoDOT's seven Customer Service Centers, Central Office, or MoDOT's website including the Report a Stormwater Concern form.

Trash as an IDDE

MoDOT has an Adopt-A-Highway program, where volunteer groups periodically pick up the trash and debris along the sides of state highways. See MCM 1, MoDOT Community and Public Education and Outreach on Stormwater Impacts, for details.

Other Occasional, Non-Stormwater Discharges

Bridge washing, cleaning and flushing is a relatively common non-stormwater discharge that occurs when necessary as a maintenance activity. Preventative maintenance extends the life of a bridge by retarding the rate of deterioration of bridge components.

All state and federal requirements are met when accomplishing this task (EPG: 771.2 Bridge Cleaning and Flushing) (Appendix G).

Figure 2: Street sweeping and bridge washing.

IDDE BMP1:

MoDOT will provide a venue to allow the public to report illicit discharges, including dumping, through an online reporting form that will submit concerns to MoDOT. Confirmed instances of illicit discharges will be reported to the proper authorities. Hazardous material spills will be reported within 24 hours upon discovery and will be made to the Missouri Department of Natural Resources (MDNR) Environmental

Emergency Response (EER) – 573-634-2436 – in accordance with MoDOT procedures and Missouri RSMo 260.500 through 260.555.

Measurable Goal 1a	MoDOT will report how many stormwater concern forms are received identifying potential illicit discharges through the website reporting form.	
Purpose Statement	Tracking the number of stormwater concern forms identifying potential illicit discharges by the public, allows the department to cover a larger area of the state with reduced resources. This promotes maximum efficiency as well as substantiates the public education and outreach efforts in MCM No. 1.	
Intended Outcome	To be informed of as many potential illicit discharge instances as possible to facilitate their elimination. Assessments will be evaluated on an annual basis with an intended positive trend through the permit cycle.	**Annual Performance**
Number of stormwater concern forms received from the public?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1b	MoDOT will track and report on education components related to litter prevention through its participation in No MOre Trash events statewide and other media outlets.	
Purpose Statement	Promotion and educational efforts of the No MOre Trash campaign assist with clean-up, education and prevention programs in Missouri. This is a multi-agency effort to protect not only clean water but wildlife and forestry resources in the state.	
Intended Outcome	The intended outcome is to get as many people included in the No MOre Trash events as well as continued efforts at the Natural Resource Conference. This measure will be evaluated annually with a target of a minimum of 100 educational events and 10,000 bags of trash collected.	**Annual Performance**
• How many No MOre Trash Bash campaign educational events were conducted and how many bags of trash were picked up.		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

IDDE BMP 2:
MoDOT will educate and cross-train maintenance staff to assist with identification of illicit discharges on MoDOT right of way.

Measurable Goal 2a	MoDOT will report the number staff educated on identification of illicit discharges and spill reporting that discharge into the MoDOT drainage system at least once every other year for illicit discharge and every year and every year for SPCC through regular training or the refresher training.	
Purpose Statement	Training is a key element to identify illicit discharges to insure adequate measures are taken to protect public health and safety.	
Intended Outcome	The intended outcome is to educate 100% of the field staff in illicit every other year on illicit discharge and annually for SPCC spill reporting. This measure will be evaluated on an annual basis.	**Annual Performance**
• What percent of MoDOT staff were trained on illicit discharge? • What percent of MoDOT staff were trained on SPCC spill reporting?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

IDDE BMP 3:
MoDOT will continually inspect, through daily work and routine maintenance, the outfalls on MoDOT's system.

Measurable Goal 3a	MoDOT will report how many bridges have been inspected annually.	
Purpose Statement	Dry weather screenings of MoDOT's bridge structures provides an opportunity to identify potential illicit connections and discharges at outfalls within the TS4 area.	
Intended Outcome	MoDOT maintains 10,400 bridges and culvert structures statewide. The intended outcome is to inspect each bridge structure in accordance with the National Bridge Inventory Rating System interval of once every 24 months.	**Annual Performance**
• How many dry weather screenings were conducted annually?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Stormwater Permits

Provisions of the federal Clean Water Act and related Missouri Clean Water Law (Section 644.051) require storm water permits where construction activities disturb one acre or more, and on projects less than one acre if they are part of a greater common plan or sale. MoDOT has a general land disturbance permit, obtained from the Missouri Department of Natural Resources (MDNR), which authorizes the discharge of stormwater and certain non-stormwater discharges from land disturbance sites from its road construction activities. The permit requires the development of a storm water pollution prevention plan (SWPPP) which outlines best management practices that will be used to reduce erosion, sedimentation and the discharge of pollutants. MoDOT's Standard Specifications requires those contracts that will be administered under the general land disturbance permit to comply with the MoDOT's SWPPP. Cities, counties and other government entities must obtain their own National Pollutant Discharge Elimination System (NPDES) land disturbance permit and, in that case, must comply with their own SWPPP.

Design Considerations

MoDOT's design division in each district is responsible for project plan development including the erosion and sediment control plan for each project. Project erosion control plans take into account topographic features, sensitive areas, site runoff, and project phasing to outline best management practices necessary to comply with MoDOT's general operating permit for land disturbance and SWPPP.

To comply with land disturbance permit requirements, as well as storm water control measures, MoDOT requires the contractor shall take certain management measures into consideration when preparing a work schedule. Such contractor measures include, but are not limited to:

- Install appropriate perimeter erosion control measures prior to grading.
- Sequence and stage construction so that disturbed areas are minimized, and no area remains exposed for unnecessarily long periods of time without proper temporary stabilization as outlined in the general operating permit and SWPPP.
- Stabilization Best Management Practices (BMPs) are to be implemented at the earliest practical time.
- Develop and carry out a regular maintenance schedule for erosion and sediment control practices.
- Utilize spill prevention and containment measures at storage sites.
- Develop and follow a plan for regular collection and disposal of waste material as well as designate a site for disposal.
- Designate the responsibility for implementing and maintaining the erosion and sediment control measures to one person.

Erosion, sediment and pollution control, and storm water management is a priority discussion point at all pre-activity meetings held out on the project site prior to any land disturbance operations beginning. Monitoring and inspection of the features of the erosion control plans is carried out and documented by the resident engineer for the construction

project. Any item of concern regarding BMPs is brought to the attention of the contractor for correction.

Control Measures (SWPPP)

As a requirement of the general operating permit for land disturbance, MoDOT maintains a Storm Water Pollution Prevention Plan (SWPPP) that outlines how requirements of the permit will be addressed to insure compliance. This document has been memorialized in MoDOT's EPG Article 806.8 (Appendix H) for use by both the MoDOT community and MoDOT's contracting community. The SWPPP describes which BMPs may be used to control runoff from land disturbance activities of one acre or more on MoDOT projects. The following BMPs may be used together or separately to ensure compliance with the general operating permit.

Temporary Controls

Temporary Berms (Type A, Type B, Type C)
Temporary Slope Drains
Ditch Checks (Rock or Alternate)
Sediment Traps
Temporary Seeding and Mulch
Silt Fence
Surface Roughening
Mulching and Crimping
Brush Piles/Barriers
Sediment Basins
Erosion control blankets
Inlet protection devices

Permanent Controls

Sediment Basins
Sediment traps
Permanent Seed and Mulch
Sodding
Energy Dissipaters
Rock Blanket
Rock Ditch Checks
Interception Ditches

The MoDOT community, contracting community, and Federal Highway Administration partners have the opportunity to comment and provide input on MoDOT stormwater runoff control plan/SWPPP through the Engineering policy ballot procedure MoDOT uses for approving all engineering policies. This procedure requires policy developers to gather input from stakeholders prior to finalizing policy changes. Once submitted to the EPG group for balloting, MoDOT senior leadership has the opportunity to provide input on the proposals, and finally, FHWA reviews the change proposals prior to incorporation into MoDOT guidance.

Construction Administration

All construction projects administered under MoDOT's general operating permit for land disturbance are overseen by MoDOT's Construction Division with project offices located statewide in each of MoDOT's seven districts. It is the responsibility of the resident engineer (RE) assigned to the project to ensure compliance with the SWPPP and the general operating permit as well as other elements of the project. Each project is assigned an inspector who is trained in land disturbance compliance, acting as an extension of the resident engineer. Quality control of permit compliance rests with the project inspector.

Alterations to the project specific SWPPPs to address stormwater runoff control are presented to the RE for consideration. Contractors have the opportunity to propose improvements to a project SWPPP during the pre-construction conference and the pre-activity meeting conducted in the field prior to land disturbance operations begin. It is the RE's responsibility to determine compliance with MoDOT's Statewide SWPPP, and the proposals benefit to the project.

Erosion and Sediment Inspections

Erosion control inspections are required for all projects engaged in land disturbance of one acre or more. Records are entered and stored in MoDOT's electronic Stormwater Database. The Stormwater Database tracks and documents all elements of permit compliance from inspection frequency, deficiency identification and correction, time extensions due to weather, and final stabilization documentation.

Inspection frequency is mandated by the general operating permit for land disturbance and tracked accordingly. Inspection records outline:

1) Contract/Job identification number;
2) County and Route location;
3) Receiving waters near the project;
4) Name of MoDOT inspector completing report;
5) RE responsible for the project,
6) Date of inspection;
7) Evaluation of potential areas of concern regarding site runoff, dewatering operations, outfall protection, good housekeeping, etc.;
8) Outline corrective actions necessary to address maintenance of BMPs;

The contractor's Water Pollution Control Manager (WPCM) receives a copy of each week's report for prompt corrective action, if necessary.

Audits and Training

As outlined in the Construction Requirements section above, MoDOT's project inspectors are responsible for first-line quality control audits of land disturbance operations. Inspectors review field conditions and conduct land disturbance inspections for compliance with MoDOT's land disturbance permit at the frequency outlined by the permit and MoDOT's SWPPP. MoDOT REs are responsible for all aspects of contract administration, including enforcement of land disturbance requirements outlined in MoDOT's SWPPP and general operating permit. REs conduct field evaluations and

review and approve each inspection report for accuracy and compliance with field conditions

MoDOT's Construction Division is responsible for reviewing the Stormwater Database for compliance with inspection report frequency, deficiency corrections, and overall project compliance. The Construction Division will also be responsible for quality assurance audits at a frequency of not less than 60 percent of the projects administered under MoDOT's land disturbance permit for projects within the TS4 area.

MoDOT's Design/Environmental Section will continue to administer the land disturbance permit for the department. The Environmental Section will be responsible for Stormwater Database administration and all land disturbance training. They will also provide overall program audits of construction projects at a frequency of not less than 20 percent the projects administered under MoDOT's land disturbance permit within the TS4 area.

MoDOT requires all inspectors, REs, designers, and contractor's Water Pollution Control Managers receive land disturbance training at least once every four years. Training may also occur more frequently on a less formal basis as deemed necessary by MoDOT.

Contractor Compliance

MoDOT has the authority to stop work on any construction job when the contractor does not perform work in compliance with contract provisions. In cases where the contractor is causing water quality problems or creates conditions with the potential to contaminate waters of the state, the engineer has the authority to take appropriate disciplinary action to ensure proper control measures are in place. Actions possible include: issuance of an Order Record (this is a non-compliance notification that negatively affects a contractor's performance rating; a poor rating could result in removal from the list of MoDOT approved contractors), suspension of payments to the contractor, or suspension of work on the project. Liquidated damages are included in the Stormwater Database for failure to complete a deficiency within seven (7) days.

Contractors are evaluated on project performance each year. One of the elements of the Performance Rating system involves erosion control compliance. Low ratings may cause disciplinary action to be taken against poorly performing contractors. Disciplinary actions range from being placed in a probationary status to disqualification from bidding on MoDOT construction contracts for a period of three years.

Protection of Streams, Lakes, Ponds, and Reservoirs

In compliance with the Missouri Clean Water Law, neither MoDOT nor MoDOT's contractors shall pollute any waters of the state, or place, cause, or permit to be placed any water contaminant in a location where it is reasonably certain to cause pollution of any waters of the state. Also, they shall not discharge water contaminants into any waters of the state, which reduce the quality of these waters below the state's water quality standards. These water quality standards include the following (MO10 CSR 20-7):

> *(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.*

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

(e) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

(f) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200–260.247.

MoDOT personnel or contractors performing work for MoDOT shall comply with these and any other federal, state and local laws and regulations that serve to control pollution of the environment. To ensure that these general criteria are met, the following guidelines from the MOU with MDNR dated September 8, 2009, will be observed:

1) *During construction, clearing of vegetation will be kept to the minimum necessary to accomplish the project.*

2) *Petroleum products, hazardous chemicals, hazardous wastes, equipment and solid waste will not be stored after construction working hours below the ordinary high-water mark.*

3) *Equipment will not be operated· in wetlands areas, except where permitted, expressed by the project plans or the engineer in writing. Petroleum products will not be stored in wetlands.*

4) *Riparian areas and stream banks will be restored to a stable condition as soon as possible after final contouring.*

5) *Work done in streams shall be conducted during low flows whenever that is reasonably possible.*

6) *Petroleum products spilled into any stream or body of water or in areas where those materials could enter a stream or body of water will be cleaned up immediately and the collected petroleum products shall be disposed of properly.*

7) *The following materials will not be used for stream bank stabilization: earthen fill, gravel, fragmented asphalt, broken concrete with exposed rebar, large slabs of unbroken concrete, tires, vehicle bodies, liquid concrete, including grouted riprap.*

CSSWROC BMP 1:
Continue training of MoDOT personnel and contractors through Land Disturbance Training to ensure implementation of the SWPPP and compliance with the Land Disturbance Permit every four years or earlier if deemed necessary by MoDOT. Land Disturbance training is available in MoDOT U (MoDOT's online training database) for all MoDOT employees, contractors and consultants. Training records are maintained and evaluated for compliance with MoDOT's training policy for land disturbance. In person training is available upon request.

<table>
<tr><td>Measurable Goal 1a</td><td colspan="2">MoDOT will report how many MoDOT employees and how many non-MoDOT employees have been trained in Land Disturbance Training classes.</td></tr>
<tr><td>Purpose Statement</td><td colspan="2">Training is a key element of insuring compliance with MoDOT's SWPPP and general operating permit. Providing training educated the target audience and assists in obtaining compliance.</td></tr>
<tr><td>Intended Outcome</td><td>To provide training to those required to insure MoDOT staff, consultants, and contractors are educated in land disturbance requirements. MoDOT will assess this measure on an annual basis with an intended goal that 100% of the land disturbance projects have trained inspectors and contractors in responsible control of land disturbance operations.</td><td>Annual Performance</td></tr>
<tr><td colspan="2">Number of MoDOT employees took the land disturbance training?</td><td></td></tr>
<tr><td colspan="2">Number of Non-MoDOT employees took the land disturbance training?</td><td></td></tr>
<tr><td>Progress</td><td colspan="2">Satisfied: Yes:☐ No:☐</td></tr>
<tr><td>Explanation</td><td colspan="2"></td></tr>
</table>

CSSWROC BMP 2:
Continued utilization of the electronic Stormwater Database for land disturbance inspection tracking and documentation. This BMP allows for project tracking of erosion and sediment control inspections, deficiencies, and corrective actions for non-compliant BMPs. Automatic email notifications are incorporated to keep inspectors and RE's informed of upcoming milestones such as inspections or deficiency correction dates to maintain compliance with the general operating permit and SWPPP.

Measurable Goal 2a	MoDOT will track the number of projects that are administered through the Stormwater Database that fall within the TS4 area through the calendar year.	
Purpose Statement	An important element of compliance is documentation. This BMP allows for superior documentation, tracking, and notification of project concerns regarding erosion and sediment control.	
Intended Outcome	100% of the projects that are constructed under the general operating permit for land disturbance within the TS4 area are incorporated in the Stormwater Database.	**Annual Performance**
Number of projects within the TS4 area administered through the Stormwater Database?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

CSSWROC BMP 3:
Perform statewide audits of construction sites to ensure that specifications and SWPPP are being followed. In addition to site inspections conducted weekly and following significant rainfall events, MoDOT will conduct quality assurance audits of projects covered by the Land Disturbance permit by the Stormwater Compliance Coordinator.

Measurable Goal 3a	Evaluate erosion control elements of land disturbance sites that involve one acre or more of land disturbance through oversight audits by central office Construction Division on 60% of the projects within the TS4 area, and overall program oversight inspections by the Design's Environmental Section on 20% of the projects within the TS4 area conducted annually.	
Purpose Statement	Evaluation of actual field conditions will allow for an independent check of compliance.	
Intended Outcome	The intended outcome is to ensure compliance with permit regulations and further assist in reducing erosion and pollution. This measure will be evaluated annually with 60% and 20% oversight inspection thresholds.	**Annual Performance**
Number of statewide quality assurance oversight reviews conducted by Construction Division?		
Number of statewide oversight inspections by the Design/Environmental Section?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

POST-CONSTRUCTION SITE RUNOFF CONTROL

The intent of this MCM is to develop, implement and enforce a program to reduce pollutants and reduce water quality impacts from site improvements on MoDOT's system.

Figure 1: Permanent detention basin on Route 141 and Big Bend Rd.

MoDOT will consider additional New Development and Redevelopment Program requirements as MoDOT projects are initiated. Project evaluations will consider comprehensive planning procedures and controls to reduce the discharge of pollutants from areas of new highway development and significant redevelopment and associated drainages. The program will consider non-highway facilities that would prevent or minimize water quality impacts. This program does not apply to normal maintenance activities.

MoDOT will continue to implement a program that ensures that new highway projects and significant highway modifications are reviewed for the need to include permanent storm water BMPs, and the results from that review implemented. As part of the program, MoDOT will define as "significant," highway modifications that disturb greater than or equal to one acre, are inside the TS4 coverage area, and fall under the definition of either new development or redevelopment that MoDOT has developed.

MoDOT will put preference on types of BMPs whenever projects have the potential to discharge to watersheds where a total maximum daily load (TMDL) has been developed and includes a waste load allocation (WLA) for MoDOT.
MoDOT evaluates the hydrologic and hydraulic impacts to the roadway and surrounding properties as outlined under EPG 748.1.2 Hydraulic Impacts of Roadway (Appendix I). MoDOT is better able to mimic the pre-construction runoff quality in new development and to the MEP in redevelopment projects by evaluating how significant an increase is for a project regarding peak flows and therefore mitigation through detention storage or other various measures.

MoDOT will ensure long-term maintenance and operation of permanent BMPs through field evaluations conducted by environmental staff or designated district staff. Field inspections evaluate BMP function, vegetative condition, and litter control. BMP conditions are documented in MoDOT's TMS Stormwater application. This application allows for inspection documentation, tracking, and mapping of the BMPS. Necessary maintenance is conducted by MoDOT's Maintenance Division.

748.1.2 Hydrologic Impacts of Roadway

Development such as a highway project can affect the hydrologic characteristics of a watershed. Such development typically increases the amount of impervious area within the watershed, and may also decrease the time of concentration of the watershed. Both of these effects tend to increase both the volume and peak rate of runoff from the watershed. The magnitude of this increase is generally dependent on the ratio of the developed area (pavement and right of way in the case of highway projects) to the total watershed drainage area. When the developed area is a large percentage of the total drainage area, the impacts can be significant. The degree of hydrologic impact shall be subjectively evaluated for all highway projects; when the impacts are estimated to be of concern, a detailed analysis shall be performed. Significant increases in peak flow rates shall be mitigated through the use of detention storage or other appropriate measures.

Figure 2: EPG 748.1.2

PCSRC BMP 1:

Train MoDOT personnel to consider post-construction BMPs where required by policy definitions of new development and redevelopment in the STIP process. Proceed through the process of tracking and officially inspecting permanent BMPs on an every other year basis. They are inspected regularly during routine maintenance activities.

Measurable Goal 1a	MoDOT will train design staff in the post construction stormwater program at least once every other year and report how many were trained in the reporting cycle.	
Purpose Statement	Training staff produces a well-educated and competent staff that will be designing projects where post-construction BMPs will be utilized. Training reduces project evaluation time during the project development phase because designers will already be aware of the requirements of the TS4 permit before the submittal of their Request for Environmental Services (RES).	
Intended Outcome	The intended outcome is to train 100% of the design staff every other year.	**Annual Performance**
What percent of Design staff were trained in the post construction stormwater program during the reporting cycle?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1b	MoDOT will report the number of projects evaluated within the TS4 area for post-construction BMPs in the reporting cycle.	
Purpose Statement	Tracking the number of projects evaluated for post-construction BMPs provides an understanding of the types of projects MoDOT is letting and how MoDOT's program for post construction BMPs is being applied.	
Intended Outcome	The intended outcome is to identify the number of projects that are evaluated for post-construction BMPs. This goal will be evaluated on an annual basis with an intended outcome of 100% of the projects within the TS4 area are evaluated for post-construction BMPs.	**Annual Performance**
How many projects were evaluated for post-construction BMPs? Potential New Developments Potential Redevelopments Maintenance Less than the one-acre threshold Other projects {describe}		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1c	MoDOT will track the number of post-construction BMPs constructed during the reporting cycle.	
Purpose Statement	Tracking the number of post-construction BMPs provides an understanding of the types of projects MoDOT is letting and how MoDOT's program for post construction BMPs is being applied.	
Intended Outcome	The intended outcome is to identify the number of post-construction BMPs constructed in a given year. This goal will be evaluated on an annual basis with an intended goal of BMPs being constructed for 60% of the new development or redevelopment projects evaluated within the reporting cycle. .	**Annual Performance**
How many post-construction BMPs were constructed during the reporting cycle? {Number of BMPs & type & job number}		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

Measurable Goal 1d	MoDOT will track how many BMPs are inspected during the reporting cycle.	
Purpose Statement	Tracking the number of BMPs inspected promotes the active maintenance aspect of the program. Maintenance is a critical aspect of the success of the BMPs.	
Intended Outcome	The intended outcome if the measure is to show positive progress toward completing a minimum of one inspection per BMP during the permit term.	**Annual Performance**
How many post-construction BMPs were inspected during the reporting cycle?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PCSRC BMP 2:
MoDOT's system crosses other regulated MS4s. Coordination and partnering with other MS4 communities provides opportunities to work together to facilitate compliance with like goals.

Measurable Goal 2a	MoDOT will report what types and how many coordination events are occurring as well as coordinating opportunities through the project development process.	
Purpose Statement	MoDOT's efforts to produce a world class transportation system impacts almost every MS4 community in the state. Promoting good stewardship through coordination and cooperation with other MS4s to affect a common goal is an effective use of resources.	
Intended Outcome	The intended outcome is to coordinate with as many other entities as necessary during the reporting cycle. This goal will be evaluated on an annual basis with an intended positive trend through the permit cycle.	**Annual Performance**
How many coordination events were attended during the reporting cycle? {Type of event and how many were attended}		
How many coordinating opportunities with other MS4 communities occurred through the project development process?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

POLLUTION PREVENTION/GOOD HOUSE KEEPING

The intent of this minimum control measure is to promote the development of an operation and maintenance program to reduce or eliminate pollution runoff from MoDOT operations and facilities within the regulated TS4 area. Operation activities conducted by MoDOT maintenance forces, that impact storm water quality include: snow and ice control on state and interstate highways, roadway surface maintenance, roadside facility maintenance, roadway appearance, and tunnel maintenance.

The following publications are to be used for maintenance of roadway facilities. Most of the publications can be found in the Engineering Policy Guide:

1. Maintenance Division Policy – EPG 171: Maintenance Policy and Operations (Appendix J).
2. Roadside Vegetation Management – EPG 171.6.4: Vegetation Management (Appendix K)..
3. Herbicide Management – EPG 821: Herbicides and Roadsides (Appendix L).
4. Maintenance Function Planning Guidelines – EPG 822: Maintenance Planning Guidelines for Mowing Operations (Appendix M)..
5. Preventive Maintenance Guidelines for Bridges – EPG 171.7 Bridge Maintenance (Appendix N)..
6. Operator's Guide for Anti-Icing – EPG 133: Snow and Ice Control (Appendix O)..
7. Missouri Standard Specifications for Highway Construction.

Structure Maintenance

MoDOT permanent drainage facilities such as detention ponds, storm drains, inlets and catch basins are inspected on an as-needed basis. Problematic storm drain inlets (select inlets known to flood) are monitored and inspected during rainstorms or if complaints are received to ensure proper operation. Documentation pertaining to inspections are limited and may normally contain only the date and time of the inspection. Each district currently inspects water drainage facilities (retention ponds and other structures) on an as-needed basis to ensure that the facility operates as designed. The frequency of inspection can vary depending on the design of the structures.

Currently, MoDOT has not located all its structural controls. Approximately 50% have been located and MoDOT will continue to work on this task throughout the 5-year permit cycle with the goal of 100% at the end of the permit cycle. Location of major structural controls (primarily large detention basins) and formal permit-based inspections are stored in the Transportation Management System (TMS) database.

Ditches

All open ditches are to be maintained to preserve their full depth and cross section. Surplus material from ditch cleaning is used in other tasks such as widening shoulders and fills, repairing erosion and filling wash outs. Where appropriate or necessary, maintenance occurs on ditches and waterways as needed.

Street Sweeping

Mechanical sweeping of sand, dirt and debris from paved surfaces, shoulders, curbs and gutters and median barriers is performed to assure roadway drainage. Sweeping maintains the environmental and aesthetic quality of the roadway and is accomplished to eliminate safety concerns. Sweeping is MoDOT's responsibility on Interstate Highways, National Highway System Routes and Commission-owned roadways within the state highway system unless covered by a maintenance agreement (EPG 127.25.1.4) (Appendix P). Street sweepings may either be disposed of in a permitted sanitary landfill or can be reused as established by MDNR. To be reused, the sweepings are processed or screened to remove trash, litter and other debris. The sweepings then must be tested as required by MDNR. Protocol for sampling and guidance is provided in the EPG link above.

Snow and Ice Control

One of MoDOT's high priorities is the removal of snow and ice from state's highway system. Anti-icing operations to prevent the formation or development of packed and bonded snow or bonded ice to the pavement surface is the first priority on continuous treatment routes during a winter weather event. Snow and ice control operations begin as soon as weather conditions warrant and continue on a 24-hour-per-day basis until all objectives outlined in the Snow and Ice Control Operations policy (EPG 133.4) (Appendix Q) are achieved. The removal of snow and ice from the roadway and the application of abrasives or de-icing products take precedence over all other maintenance work. MoDOT's Operator's Guide For Anti-icing (EPG 133.5) (Appendix R).and the snow-and-ice section of the Maintenance Policy Manual are both used to clarify the department's official procedure (EPG 133: Snow and Ice Control).

All abrasives and de-icers are applied in accordance with the Operator's Guide for Anti-icing and the snow-and-ice section of the Maintenance Policy. These directives include the following:

- Chemicals and stockpiles of treated abrasives are to be stored in a manner to prevent loss of material and minimize damage to state or private property.
- All bulk salt shall be stored inside covered storage structures.
- Asphalt pads are installed under and in front of storage facilities.
- Mixed materials shall be covered when not in use and between storm events.
- No treatment of paved shoulders anti-icing or de-icing chemicals.

Required maintenance practices which have a side benefit to water quality include:

- Application of only the amount of salt or salt/abrasive mix material necessary to provide safe driving.
- Use of clean snow and ice control abrasives (sand or 3/8 crushed aggregate) that contain only 0-10 percent passing a No. 10 sieve.
- Use of snow and ice control chips only when needed to provide traction.
- Sweeping or flushing of bridges as soon as possible after a storm event.

MoDOT uses a database to track information on how much winter abrasives, calcium chloride, or sodium chloride was applied in the different maintenance areas during a snowfall event. This information is contained in the Winter Events Database Report.

Roadside Management

MoDOT's roadside management program keeps the roadsides safe and attractive. The program establishes and maintains appropriate vegetation to control erosion and limits undesirable vegetation. Specific guidance updated in 2012 is provided in the Roadside Vegetation Management Article (EPG 822). This is accomplished through several methods including an effective herbicide program, fertilization, mowing, brush control and litter removal.

Herbicide Program

MoDOT uses a variety of techniques to manage roadside vegetation. Herbicides provide effective and efficient vegetation control. Specific guidance for herbicide use is provided in MoDOT's EPG 821 Herbicides and Roadsides. Operators and their supervisors are required to read and follow the label for application rates. Only non-restricted herbicides are used. Employees are encouraged to obtain and maintain a public operator's license certified by the Missouri Department of Agriculture. Detailed recordkeeping is required. Spray equipment is clean, in good operating order and properly maintained. Operators are instructed to not apply herbicides to standing, running or open water. Only approved aquatic herbicides are used to control undesirable vegetation in or near water. Care is taken to avoid drift, run-off, leaching and spills.

Mowing Operations

Mechanical and chemical vegetation management is done to maintain sight distance, improve aesthetics and control undesirable vegetation. At a minimum, mowing occurs to a distance of at least one mower width from the edge of the traveled way per the guidance contained in the Roadside Vegetation Article (EPG 822).

Roadside Facilities

Drainage facilities within the rights of way owned by MoDOT include cattle passes, collection ditches, shoulder drains, side ditches, under drains, outlet ditches, contour ditches and culverts (includes structures that span 20 feet or less). These facilities are maintained to be able to handle runoff from rainfall events. Maintenance includes removing trash, debris and sediment that has collected in the facility. All drainage facilities statewide are inspected periodically; minor defects are repaired as necessary; and major defects are reported to the Maintenance Superintendent responsible for that geographic area. Natural watercourses and streams that pass within the right of way are kept clean, so water can flow freely. Maintenance policies and operations can be found in the EPG Article 171. This includes water management, roadsides, vegetation management, snow and ice control, and many others.

Procedures to Prevent, Contain and Respond to Spills

Procedures to prevent, contain and respond to spills are found in MoDOT's Hazardous Material Response Plan (Appendix S). to assure the material is handled properly. All vehicles carrying hazardous materials must be identified by the distinct diamond shaped symbol. The following are guidelines taken from MoDOT's Guide to Hazardous Material Spill Response on State Highways:

- Avoid contact with and breathing vapors of the spilled material.

- No smoking allowed in the spill area.
- If a state waterway is involved in the spill the Missouri Department of Natural Resources must be contacted along with the MoDOT District Hazardous Materials Spill Coordinator.
- Obtain facts and information on the spill for the emergency team and maintenance supervisor.
- Call the Missouri State Highway Patrol for help and notify the maintenance supervisor.
- Coordinate with emergency response personnel.
- An "Incident Commander" should coordinate with other agencies and handle direct reporting of the spill.
- Use appropriate traffic control to isolate the spill area from public contact.
- Wait for instructions and do not clean up the spill or contaminated area.
- If private property or waterways are threatened, containment of spill should be coordinated with Missouri Department of Natural Resources, Missouri State Highway Patrol and the appropriate maintenance supervisor.

Spill Prevention and Response Procedures at Maintenance Facilities

MoDOT has implemented Spill Prevention Control and Countermeasure (SPCC) plans at maintenance facilities to prevent oil spills from occurring, and to perform safe, efficient and timely response in the event of a spill or leak. In accordance with United States Environmental Protection Agency (EPA) regulations (40 CFR 112), MoDOT must prepare and implement an SPCC plan for facilities that could reasonably be expected to discharge petroleum or hazardous material into or upon navigable waters or adjoining shorelines; that meet one of the following conditions:
Above-ground oil storage capacity exceeds 1,320 gallons; or underground oil storage capacity exceeds 42,000 gallons, unless the underground tanks are subject to all of the technical requirements of 40 CFR 280 or a state program approved under 40 CFR 281. (Missouri's approved program is 319.100 – 319.139, RSMo and 10 CSR26-1 thru 10 CSR26-5 Rules for Underground Storage Facilities.)

As defined by 40 CFR Part 112, oil includes all grades of motor oil, hydraulic oil, lube oil, fuel oil, gasoline and diesel, automatic transmission fluid (ATF), used oil and transformer mineral oil. The definition also includes non-petroleum oils such as animal or vegetable oils and synthetic oils.

Facility Runoff Control Plan

MoDOT-owned operations and maintenance facilities within the TS4 coverage area are required to have a Facility Runoff Control Plan (FRCP) (Table 1). The plan requires, at a minimum, bi-yearly (every 6 months) inspections of the property for implementing Good Housekeeping/Pollution Prevention measures, to identify potential target pollutants and sources, and take action for managing those sources.

Target pollutants are generated through the day-to-day operation and maintenance activities conducted within maintenance facilities. There are five groups of target pollution categories including a range of pollution sources that can be managed to reduce the risk of stormwater pollution by minimizing the exposure of target pollutants to the environment. Problems identified during the inspection should be addressed or resolved before the next rain event and no later than the next inspection.

The FRCP is kept on MoDOT's SharePoint site and at the facility location along with the SPCC plan.

Figure 3: Maintenance facility in SW District.

PPGHK BMP 1:
Continue to educate maintenance staff and MoDOT general staff on SPCC and FRCP. Evaluate the effectiveness of housekeeping activities and identify those processes and/or procedures that are impacting waters of the state using semi-annual inspections of all MoDOT facilities to assess compliance.

Measurable Goal 1a	MoDOT will provide training to promote Pollution Prevention and Good House Keeping through internal training opportunities throughout the reporting period. .	
Purpose Statement	Continuous training and education efforts produce a competent staff that can foster a safe work environment while protecting the environment	
Intended Outcome	The intended outcome is to train 100% of the applicable staff every other year on good housekeeping and pollution prevention.	**Annual Performance**
What percent of MoDOT staff attended training or a refresher and what training class was attended?		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PPGHK BMP 2:
MoDOT uses chemicals and abrasives during winter operations to facilitate the safe travel of motorists using state roads. Depending on the type of event, MoDOT uses its Winter Operations Guidelines to dictate methods of snow and ice removal.

Measurable Goal 2a	MoDOT will report annually total materials used for winter operations.	
Purpose Statement	The purpose of this Measurable goal is to identify the amount of material being used on Missouri's system for snow and ice control. MoDOT recognizes the importance of conservation of these items but must insure the safety of the traveling public.	
Intended Outcome	Identify the amount of materials used. MoDOT will evaluate this measure on an annual basis with an intended downward trend. Winter conditions will drive this measure.	**Annual Performance**
• Beat Juice usage?		
Salt Usage:		
• Calcium Chloride Dry Flake?		
• Calcium Chloride Pellet?		
• Liquid Calcium Chloride?		
• Salt Brine?		
• Salt, Sodium Chloride?		
Aggregate, chips, sand etc.		
• Ice Ban (magnesium chloride)		
• Aggregate Sand		
• Aggregate Clean Cinders		
• Aggregate Limestone Chips		
• Aggregate Snow & Ice Abrasives		
Progress	Satisfied: Yes:☐ No:☐	
Explanation		

PPGHK BMP 3:
Bridge cleaning and flushing are used to remove de-icing chemicals from the bridge deck, drains, expansion device drains, piers, abutments, and lower truss chords; thereby prolonging the life of the structure. Bridge cleaning activities use dry methods and equipment (scraping, sweeping, and vacuuming), to prevent debris, sediment, and other substances from entering waters of the State. Bridge flushing and cleaning shall adhere to the process and procedures outlined in the EPG 771.2 and the beneficial use requirements outlined in EPG 127.25.1.4.

Measurable Goal 3a	MoDOT will report approximately how many bridges are flushed/cleaned in a reporting cycle.	
Purpose Statement	Tracking the number of bridges washed provides a better understanding of the potential discharges and brings heightened awareness to the operation.	
Intended Outcome	The intended outcome is to report the number of bridges being washed in a reporting cycle. This measure will be evaluated on an annual basis with an intended target average of not more than 7220 bridges per year over the term of the permit cycle. .	**Annual Performance**
How many bridges were flushed or cleaned in the reporting cycle?		
Progress	Satisfied: Yes:☐ No:☐	

FID	NAME	DISTRICT	COUNTY NAME	TYPE	Address	Adjacent MS4 Operator	Receiving Water
1	ST. JOSEPH COMMUTER LOT	1	BUCHANAN	Commuter Lot	IS 29 AND US 169 (S)	St. Joseph	Trib. Candy Creek
2	ST JOSEPH South	1	BUCHANAN	Shed	1/4 mile East of I-29 at the South US 169 exit	St. Joseph	Trib. Candy Creek
3	ST. JOSEPH DISTRICT OFFICE	1	BUCHANAN	Complex	3602 N. Belt hwy	St. Joseph	Trib. Missouri River
4	HANNIBAL COMPLEX	2	MARION	Complex	US 61 S, 1 Mile south of Rt MM 1.2 miles	Hannibal	Trib. Bear Creek
5	LEES SUMMIT DISTRICT COMPLEX	3	JACKSON	Complex	Exit 10A from IS-470 S turn right, turn right on first road right 1 mile up Independence Ave, Shed on right	Lee's Summit	Trib. Unity Lake #2
6	18TH AND INDIANA	3	JACKSON	Shed	18TH AND INDIANA (Motorist Assist)	Kansas City UA	Kansas City sewer system to treatment facility
7	BELTON	3	CASS	Shed	West Outer road South of US 71 and south of MO 58 interchange	Kansas City UA	East Creek
8	INDEPENDENCE	3	JACKSON	Shed	West Outer Rd of MO 291 1/2 mile N of US 24	Kansas City UA	Trib. Mill Creek
9	LEES SUMMIT STROTHER RD	3	JACKSON	Shed	West of 291 and south of Strother Rd	Lee's Summit	Trib. Lakewood Lakes
10	MARSHALL	3	SALINE	Shed	.25 miles West of Hwy 65 on Hwy 20	Marshall	Trib. North Fork Finney Creek
11	MULBERRY	3	JACKSON	Shed	650 Mulberry St, Kansas City	Kansas City UA	Kansas City sewer system to treatment facility
12	NORTHMOOR	3	PLATTE	Shed	take Riverside exit to 69 go left to Rt AA then left, building on westside of road	Kansas City UA	Line Creek
13	SEDALIA	3	PETTIS	Shed	2200 South Limit, off 65 South by Mo State Fairgrounds	Sedalia	Trib. Flat Creek
14	SKILES	3	CLAY	Shed		Kansas City UA	Trib. Missouri River
15	STADIUM	3	JACKSON	Shed	SE outer rd of I-70 and Blue Ridge Cutoff Behind Holiday Inn	Kansas City UA	Little Blue River
	GRAIN VALLEY	3	JACKSON	SHED	5390 s Barr Rd	Kansas City UA	Trib. Blue Branch
16	JEFFERSON CITY DISTRICT COMPLEX	4	COLE	Complex	DISTRICT 5 COMPLEX	Jefferson City	Wears Creek
17	COLUMBIA	4	BOONE	Shed	Paris Rd - Rt B North of US 63 1/4 miles north, on the northside of the road	Columbia	Trib. Hinkson Creek
18	FULTON	4	CALLAWAY	Shed	.2 off US 54, Rt F exit Over overhead to 1st st on left, 1st on drive rt	Fulton	Trib. Stinson Creek
19	JEFFERSON CITY	4	COLE	Shed	Off Big Horn and 50 West next to CDL site	Jefferson City	Trib. Binder Lake
20	LEBANON	4	LACLEDE	Shed	Off 127 exit. From LP44(Elm St) across from Case knife Outlet	Lebanon	Trib. Goodwin Hollow
21	BALLAS	5	ST. LOUIS	Shed	Northeast corner of I-64/40 & Ballas road (Call Ahead)	Town & Country-M	Trib. Deer Creek
22	BELLEFONTAINE	5	ST. LOUIS	Shed	1/2 mile S of 270 off 367. Turn off S367 to R go up hill by CDL site	St. Louis UA	Trib. Maline Creek
23	BROADWAY	5	ST. LOUIS CITY	Shed	from 55 take Park Ave or 7th street exit turn east on Park take it to Broadway go north 2 blocks	St. Louis UA	
24	CEDAR HILL	5	JEFFERSON	Shed	Off of MO 30 on Local Hillsboro Road	St. Louis UA	Trib. Big River
25	EUREKA	5	ST. LOUIS	Shed	On North Outer Rd, take 109 from I-44, turn left 1 mile down on right	Eureka	Flat Creek
26	FESTUS	5	JEFFERSON	Shed	1000 Airport Rd. Take U.S. 61 approximately 0.5 miles south of U.S 67 to Airport Rd.	St. Louis UA	Plattin Creek

FID	NAME	DISTRICT	COUNTY NAME	TYPE	Address	Adjacent MS4 Operator	Receiving Water
27	HAMPTON	5	ST. LOUIS CITY	Shed	HAMPTON	St. Louis UA	River Des Peres
28	LEMAY	5	ST. LOUIS	Shed	Near I-55 & Bayless. From I-55 go W on Bayless to Union, left on Union cross I-55 go left on Hoffmeister until you reach shed	St. Louis UA	Gravois Creek
29	NORMANDY	5	ST. LOUIS	Shed	Southwest corner of I-70 at Bermuda Road	Normandy-MSD	Marlene Creek
30	BARRETT STATION	5	ST. LOUIS	Shed	BARRETT STATION	St. Louis UA	
31	SPECIAL-MOTORIST ASSIST-CHESTERFIELD	5	ST LOUIS	Shed	CHESTERFIELD	Town & Country-M	Trib. Creve Coeur Creek
32	ST CHARLES	5	ST. CHARLES	Shed	Old 94 and Muegge Rd. Hwy 94 to Pralle, left on old 94	St. Louis UA	Dry Creek
33	SUNSET HILLS	5	ST. LOUIS	Shed	on Rt 30 between 270 and 141 on Rahning Rd, 1/4 on left	Sunset Hills-MSD	Trib. Meramec River
34	WENTZVILLE	5	ST. CHARLES	Shed	0.75 miles North of Rt. A	St. Louis UA	Trib. Dry Branch Creek
36	SPRINGFIELD COMPLEX	6	GREENE	Complex	off Mo 744, .4 mile west of 65, then .2 mile north on Fairview west side of road	Springfield	Trib. South Dry Sac River
37	BOLIVAR	6	POLK	Shed	Rt 32, 1/2 mile East of Rt 13	Boliver	Branch Creek
38	CARTHAGE	6	JASPER	Shed	Corner of 171 & 96 one mile West of town	Carthage	Trib. Spring River
39	JOPLIN	6	JASPER	Complex	.8 mile East of Bus 71 off Rt FF	Joplin	Trib. Silver Creek
40	NEOSHO	6	NEWTON	Shed	From Jct 60 & 59 Go N on Bus 60 1 mile on left next to Meeks	Neosho	Trib. Hickory Creek
41	OZARK	6	CHRISTIAN	Shed	Rt F exit off 65, East to to 2nd stoplight, right 300 yards	Springfield	Trib. Elk Valley
42	KENNETT	7	DUNKLIN	Shed	412 West ti Rt O, Right on O, 1 mile on right (white fence)	Kennett	Ragland Slough
43	POPLAR BLUFF	7	BUTLER	Shed	Outer road of US 60 @ North end of Poplar Bluff	Poplar Bluff	Trib. Black River and Trib. Pike Creek
44	SIKESTON	7	SCOTT	Shed	I-55 S to exit 67, left, East on E Malone 1.5 miles, N side Edwards	Sikeston	Trib. St. Johns Ditch
45	CAPE GIRARDEAU STORAGE LOT	7	CAPE GIRARDEAU	Lot	SOUTHEAST CORNER OF IS 55 AND RT 74	Cape Girerdeau	Trib. Cape La Croix Creek

Table 1: MoDOT facilities within the TS4 coverage area that have operations activities and are required to have a FRCP.

APPENDIX A – Storm Water Webpage

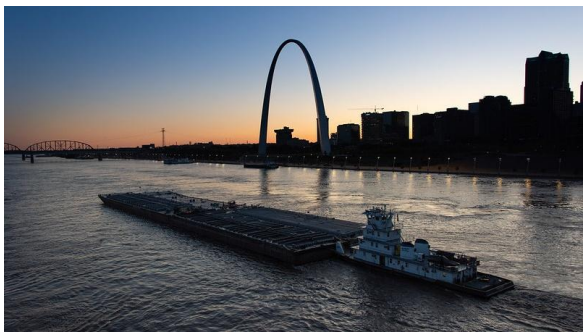
EXPLORE THIS TOPIC

Stormwater/Water Quality

Importance of Missouri Waters

In Missouri, our surface water and groundwater resources are critical for the economic, health and well-being of our citizens. Stormwater has the potential to carry pollutants from MoDOT's right-of-way into streams, rivers, and lakes. MoDOT has developed a Stormwater Management Program to reduce pollutants in stormwater from MoDOT's roadways and facilities.

Use the Explore This Topic to the left and the links below to review MoDOT's Stormwater Program components.



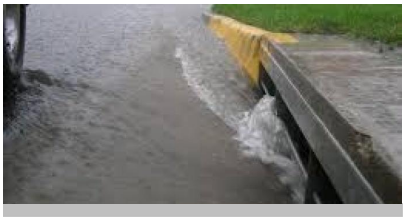
National Pollutant Discharge Elimination System (NPDES)

Missouri Department of Transportation (MoDOT) is regulated under a National Pollutant Discharge Elimination System (NPDES) general, statewide operating permit that requires MoDOT to develop and implement a comprehensive program to reduce pollution, to the maximum extent practical, that discharges to surface waters resulting from stormwater runoff.

MoDOT requested a single NPDES Municipal Separate Storm Sewer System (MS4) permit for stormwater discharges from all MoDOT properties, facilities, and activities including construction. The Missouri Department of Natural Resources issued a modified Transportation Separate Storm Sewer System (TS4) permit on November 1, 2019.

MoDOT has developed a Stormwater Management Program (SWMP) to comply with the Permit requirements and address stormwater pollution related to highway planning, design, construction, and maintenance activities throughout the state.

Provisions of the Federal Clean Water Act and related state rules and regulations require a municipal separate storm sewer system (MS4) permit within communities designated as urbanized areas (UA), serving a population density of 50,000 people or more, or are located outside an urbanized area serving a jurisdiction with a population of at least 10,000 and a population density of 1,000 people per square mile or more. Furthermore, a municipal separate storm sewer means a conveyance or system of conveyances including roads and highways with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, paved or unpaved channels, or storm drains designated and utilized for routing of storm water. MoDOT has an MS4 individual permit developed specifically for a transportation agency, also known as a Transportation Separate Storm Sewer System Permit (TS4) , obtained from the Missouri Department of Natural Resources (MDNR), delegated by the Environmental Protection Agency (EPA). It requires MoDOT to develop and adhere to a Storm Water Management Plan (SWMP) comprised of six minimum control measures (MCMs).



Stormwater Resources

Report a Stormwater Concern

Stormwater Brochure

Snow Removal Fact Sheet

TS4 Permit

Stormwater Management Program (SWMP)

MoDOT Facilities within the TS4 Area

Annual TS4 Report

- 2020 Annual Report
- 2019 Annual Report
- 2018 Annual Report
- 2017 Annual Report
- 2016 Annual Report

E-Updates for MoDOT's Stormwater Program

Sign up to receive text or email alerts regarding MoDOT's Stormwater program. Click here to create your free account.

2020 MoDOT Community Education Efforts

Construction Permit and SWPPP Training

Design Permit and EPG Update Training

Public Notice

For any questions or concerns regarding stormwater, or to provide comments to the public notice items please email Stormwater@modot.mo.gov.

Missouri Department of Transportation

105 W. Capitol Avenue
Jefferson City, MO 65102
1-888-ASK-MODOT (275-6636)
1-866-831-6277 (Motor Carrier Services)

Our Mission, Values and Tangible Results

Missouri Highways and Transportation Commission

How Do I...

Report a Road Concern

Report a blocked highway-railroad crossing

Rate a work zone

Request a highway map

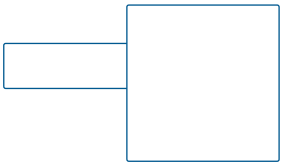
Request a Speaker

Adopt a section of highway

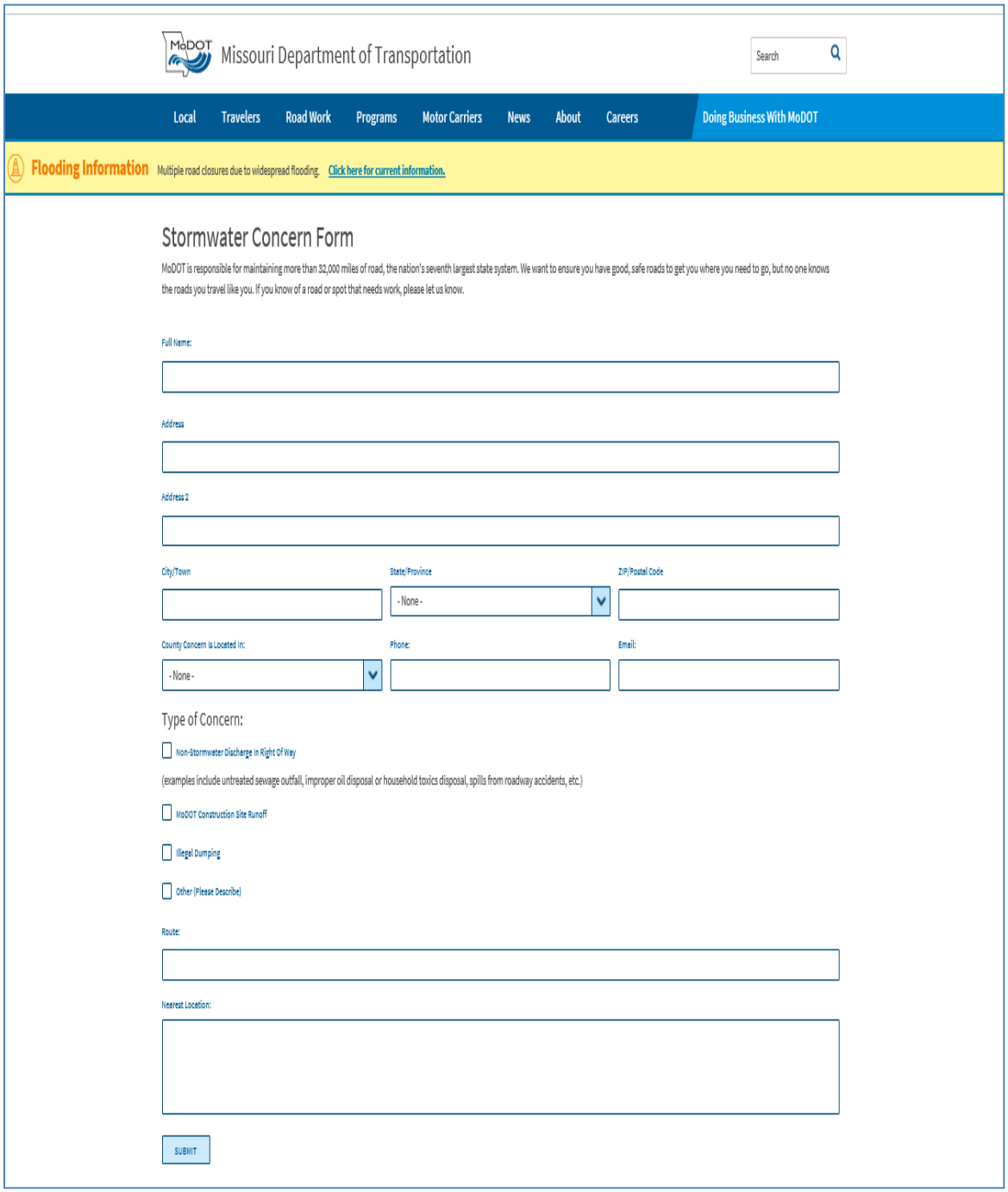
Renew my driver's license

File a claim

Renew License Plates Online Missouri State Government Missouri Amber Alert
Missouri Homeland Security



APPENDIX B – Report a Stormwater Concern Form



Missouri Department of Transportation

Search

Local | Travelers | Road Work | Programs | Motor Carriers | News | About | Careers | Doing Business With MoDOT

Flooding Information Multiple road closures due to widespread flooding. Click here for current information.

Stormwater Concern Form

MoDOT is responsible for maintaining more than 32,000 miles of road, the nation's seventh largest state system. We want to ensure you have good, safe roads to get you where you need to go, but no one knows the roads you travel like you. If you know of a road or spot that needs work, please let us know.

Full Name:

Address

Address 2

City/Town | State/Province | ZIP/Postal Code

- None -

County Concern is Located In: | Phone: | Email:

- None -

Type of Concern:

- [ ] Non-Stormwater Discharge in Right Of Way

(examples include untreated sewage outfall, improper oil disposal or household toxics disposal, spills from roadway accidents, etc.)

- [ ] MoDOT Construction Site Runoff
- [ ] Illegal Dumping
- [ ] Other (Please Describe)

Route:

Nearest Location:

SUBMIT

APPENDIX C – Stormwater Brochure

How Does MoDOT Protect Water Quality?

- **Construction BMPs (Best Management Practices)**
  - Vegetative buffers settle and capture sediment
  - Silt fence to keep sediment on site
  - Check dams to slow water flow and settle sediment
  - Filter bags to remove sediment
- **Seed and Mulch Ground Disturbance**
- **Limiting the Amount of Ground Disturbance Exposed to Stormwater**
- **Post-Construction Stormwater Management**
  - Detention basins and grassed swales catch sediment and pollutants
  - Reduction of salt usage, using beet juice for deicing roads

Energy Dissipator

For More Information

Links

Environmental Protection Agency
www.epa.gov/npdes/stormwater

Missouri Department of Natural Resources
www.dnr.mo.gov/env/wpp/stormwater

MoDOT's Engineering Policy Guide
http://epg.modot.org

Email Us

Stormwater@modot.mo.gov

Report A Stormwater Concern

http://www.modot.org/asp/repair.htm

The dangers of littering

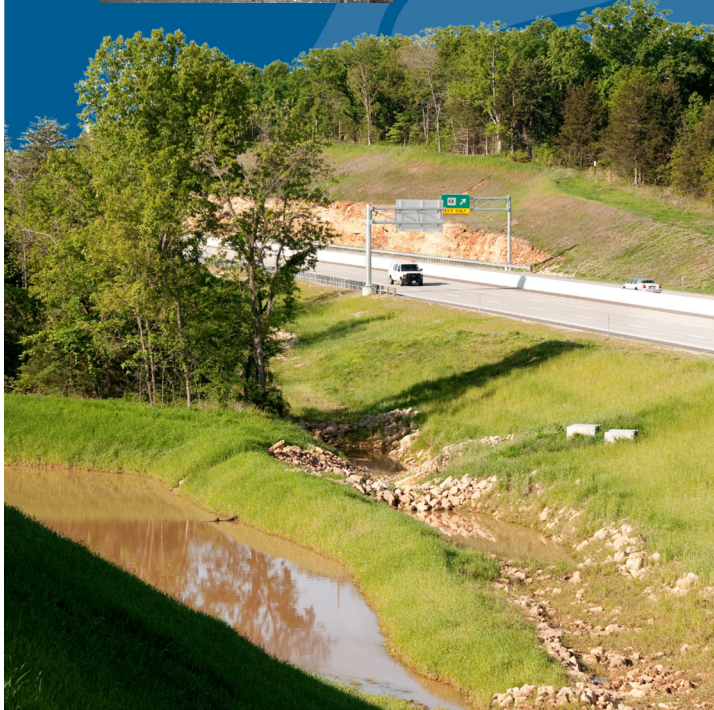
MoDOT Design Division
Environmental Section
601 West Main Street
Jefferson City, MO 65101
573-526-4778

Meeting the NPDES MS4 Permit Requirement

DE11.116

MoDOT and

Stormwater Pollution Prevention



What Is Stormwater?

Stormwater is increased surface water due to heavy rains or snow storms.

Stormwater flows across roofs, lawns and pavement and is carried to streams by culverts, pipes and ditches.

What Makes Stormwater Harmful?

Stormwater picks up litter, pesticides, lawn chemicals, pet feces and exposed soil on its way to streams used for fishing, swimming and drinking.

Polluted storm water is harmful to people and animals.

What is Non-Stormwater Discharge?

A non-stormwater discharge is anything the storm sewers carry that is NOT rainwater or snow melt.

An illicit discharge is any discharge that is not composed entirely of storm water and makes its way to a stream. Examples of an illicit discharge include:

- Sanitary Wastewater
- Untreated Sewage
- Car Wash Wastewaters
- Improper Oil Disposal
- Laundry Wastewaters
- Auto and Household Toxics
- Sediment or Soil

Evidence of an Illicit Discharge

What Can You Do To Reduce Stormwater Pollution?

- Never dump anything down the storm drain
- Dispose of pet waste in a trash can
- Report spills
- Take used oil to an auto shop
- Pick up litter

Why Does MoDOT Care About Stormwater?

1. It affects construction and maintenance of roadways.
2. Road surfaces can carry pollutants from vehicles onto MoDOT right of way.
3. MoDOT tracks and reports illicit discharges as part of its stormwater permit.

APPENDIX D – EPG Section 129

Category:129 Public Involvement

Figures

Sample Location Study Display (http://epg.modot.org/files/a/a1/129.1_Display_of_Alternatives.jpg)

Sample Commission Exhibit 1 (http://epg.modot.org/files/1/1e/129.1_Figure_10_Location_Sketch.pdf)

Sample Commission Exhibit 2 (http://sp/sites/de/epg/Lists/EPGResponse/Attachments/1427/SampleCommissionExhibit2.pdf)

Forms

Sample Letter Advertising a Public Hearing (https://epg.modot.org/forms/DE/Public%20Involvement/Sample%20Letter%20Advertising%20a%20Public%20Hearing.docx)

Sample Notice 4F (https://epg.modot.org/forms/DE/Public%20Involvement/Sample%20Notice%204f.docx)

Sample Notice of Public Hearing (https://epg.modot.org/forms/DE/Public%20Involvement/Sample%20Notice%20of%20Public%20Hearing.docx)

Sample Opportunity for a Public Hearing/Meeting Notice (https://epg.modot.org/forms/DE/Public%20Involvement/Sample_Opportunity_for_Public_Hearing.doc)

Sample Public Involvement Plan or Communication Plan

Sample Request for Approval of Location and/or Design of Highways to State Design Engineer (https://epg.modot.org/forms/DE/Public%20Involvement/SampleRequestforApprovelofLocationorDesigntoStateDesignEngineer.docx)

Sample Request for Approval of Location to the Commission (https://epg.modot.org/forms/DE/Public%20Involvement/SampleRequestforApprovelofLocationorDesigntotheCommission.docx)

Sample Transcript (https://epg.modot.org/forms/DE/Public%20Involvement/SampleTranscript.pdf)

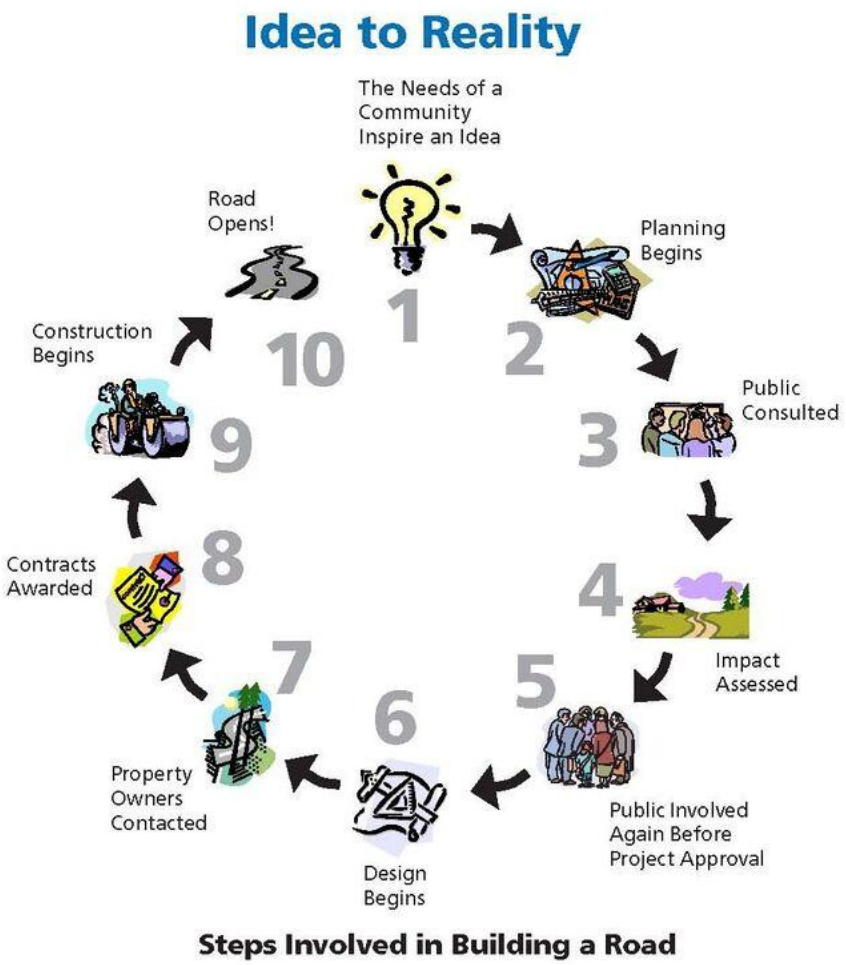
Missouri Department of Transportation (MoDOT) works to communicate important information to the public, media, employees, stakeholders, and other department customers through a variety of methods, including news releases, publications, special events, and social media sites.

Missouri's citizens expect an active voice in the location and design of transportation facilities. They recognize the important role transportation has in their life as well as the vitality of their communities. Existing transportation facilities, particularly transportation improvements, have a direct impact on the social, economic, and environmental resources of Missouri's communities. As a result, MoDOT values the public's input on transportation improvements and has established various methods to gather it this feedback. Some of these methods include:

- Identification and Prioritization of Needs (http://epg.modot.org/index.php/121.2_The_Planning_Framework_for_Transportation_Decision-Making) through The Planning Process
- Public Hearings
- Public Meetings
- Direct mailings or contact with individuals impacted
- Virtual Public Involvement

In addition, MoDOT provides useful information to Missourians concerning the operation and maintenance of the highway system. This information is available from the following sources in addition to others:

- www.modot.org (http://www.modot.org/)
- Traveler Information Map (TIM) (http://traveler.modot.org/map/)
- E-updates
- Changeable message boards
- Customer Service Centers (1-888-ASK MoDOT)
- Work Zone Status (http://traveler.modot.org/report/modottext.aspx#tag_rc)
- Road Condition Report (http://traveler.modot.org/report/modottext.aspx#tag_rc)
- Social media (https://www.facebook.com/MoDOTStatewide)



Steps Involved in Building a Road

The development of quality transportation improvements depends on early, frequent, and continuous involvement of the public in project decisions. Additionally, real time information about the State's highway system allows the traveling public to use it efficiently.

The public frequently questions not only the design and physical features of a project, but also its basic premise (the purpose and need) and assumptions (e.g., the range of alternatives) as identified by MoDOT.

Public involvement allows MoDOT to gather real, valid input on transportation needs and to work with customers to refine solutions that meet those needs.

The following guidelines for public involvement are not to be viewed as all-inclusive. Instead, they outline the minimum level of expectations for public involvement, with each individual effort matching the specific needs of the project and the community involved. The specific needs of the project should be documented in a public involvement plan (PIP).

Table 129, Public Involvement by Type

Public involvement is required for every project			
Public Involvement Method	**Minimum Requirement for:**	**Required Documentation (if applicable)**	**Responsible Individual(s)[1]**
Routine methods such as social media, news releases, opportunity for meetings, etc.	PCE and CE2	Public notices, news releases, meeting notes, Comments/responses, sign-in sheets	PM, CR staff, CM staff
Pre-Location Study Meeting	Some CE2s, EA, EIS	Public notices, presentations, studies or documents made available, Minutes, comments, responses, sign-in sheets	PM, CR staff
Location Public Meeting	Some PCEs, CE2, EA, EIS	Public notices, presentations, studies or documents made available, minutes, Comments and Responses, sign-in sheets	PM, CR staff
Design Public Meeting	Some PCEs, CE2, EA, EIS	Public notices, presentations, studies or documents made available, minutes, Comments and Responses, sign-in sheets	PM, CR staff
Agency Scoping Meeting	EA, EIS	Notices, presentations, studies or documents made available, Minutes, comments, responses, sign-in sheets	PM, CR staff
Public Hearing (Commission Policy, FHWA policy)	≥20 acres new RW or permanent easements rural, ≥100,000 square feet new RW or permanent easements urban[2], EA (if applicable), EIS, Long Range Plan (CFR 771.111(h)(2)(iii)	Notices, presentations, studies or documents made available, minutes, transcript, sign-in sheets	PM, CR staff
Public Meeting	Discretion of the District Engineer	Notices, presentations, studies or documents made available, minutes, Comments and Responses, sign-in sheets	PM, CR staff
Section 106, 4(f)[3], and 6(f)	Impacts (not significant or adverse EPG 129.8) on historic properties, parks, recreation areas, and wildlife and waterfowl refuges	Notices, presentations, studies or documents made available, minutes, Comments and Responses, sign-in sheets	PM, CR staff, DE-ENV/HP
Noise Wall Public Meeting	Noise impacts where noise abatement is reasonable and feasible	Notices, presentations, studies or documents made available, minutes, Comments and Responses, sign-in sheets	PM, CR staff, DE-ENV/HP

[1] PM: Project Manager; CR staff: Communications Division staff; CM staff: Construction and Materials staff; DE-ENV/HP: Design Division Environmental and Historic Preservation staff

[2] "Urban" is defined as within a U.S. Census Bureau designated urbanized area or an urban cluster.

[3] Requires special statements in the public notice. Coordinate with MoDOT Environmental Section.

Public hearings and public meetings are forums for providing information on proposed projects, their anticipated impacts, and for receiving citizen comments. Both are used to comply with the Missouri Highways and Transportation Commission's (https://www.modot.org/missouri-highways-and-transportation-commission-0) desire to furnish the public with general information and to allow the public to express their opinions regarding highway matters. Information related to the impacts of a proposed action can also be gathered. Federal transportation policy requires public involvement in the development of the purpose and the range of alternatives to be considered for EAs and EISs. The National Environmental Policy Act (NEPA) and FHWA regulation 23 CFR 771 require one or more public meetings or opportunity forum(s) for the public to participate. The Commission directs MoDOT to conduct "location and design" public involvement to gather public comment.

Statewide Planning Partner Meeting

Contents

129.1 Environmental Justice, ADA, LEP and Title VI

External Civil Right (https://www.modot.org/welcome-external-civil-rights)

Early in project development, the Project Manager (PM) shall assess whether the method of public involvement chosen for a particular project is reasonable for the project, whether it adequately reaches the proper constituents, whether there are environmental justice (EJ) or limited English proficiency (LEP) concerns, and whether the method would adequately provide the needed information and afford the opportunity for the public to provide feedback. Minority and disadvantaged populations are defined by Title VI (https://www.justice.gov/crt/fcs/TitleVI-Overview) and the EJ Executive Order 12898 (https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejustice-nepa.aspx) while low-income populations are defined by the census category. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994 directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. If there are questions concerning the participation of minority and disadvantaged populations, contact the Environmental Specialist who is the resource for socioeconomic issues in the Design Division (https://modotgov.sharepoint.com/sites/DE/). Discussion on community impact assessment can also be found in EPG 127.3. The first step is to identify populations of people interested in the project and impacted by the project, then determine which outreach methods would be most effective. The PM should work with the Area Engineer and use existing information such as from the Conceptual Study Report (CSR), if developed, to help identify the area impacted by the project.

The process for identifying interested people/populations impacted by the project should be documented in the PIP and housed in eProjects (http://eprojects/SitePages/Home.aspx). The PIP is developed by the PM or district staff, or the project consultant, if tasked with public involvement for the project, and approved by MoDOT staff. It may become necessary to revise the PIP as the project evolves, conditions change, oppositional groups emerge, or new issues arise. It is prudent to complete a limited English Proficiency (LEP) analysis (https://www.modot.org/media/12116), similar to the Community Impact Assessment process outlined in EPG 127.3.1.3, and review it for protected populations early in the

planning phase, when the PIP is developed, to identify stakeholders, affected public, and whether targeted outreach to underserved populations are needed. Then appropriate outreach efforts can be planned for these populations and budgeted appropriately.

Effectively reaching underserved populations may require significant staff time and resources, and special efforts or innovative methods may need to be used to ensure the inclusion of affected community members. This is especially important for underrepresented groups, such as minority and low-income groups, and in communities where a significant percentage of the affected population does not speak or understand English. Consider the need for translators, interpreters, and written materials in languages other than English. Reference information on LEP is provided in Executive Order (E.O) 12898. Innovative methods to involve minority and economically disadvantaged sectors of the community, as well as other groups such as senior citizens, economic developers, and historical and environmental groups, should also be explored. Such methods could include house-to-house contacts; providing bulletins at kiosks; meeting with community groups, church organizations, community minority liaisons, local grocery stores, and libraries; placing notices in newspaper and using other media outlets which cater to these groups. Accommodations should also be made for non-English speaking community members or those with language barriers.

The meeting location selected shall be in compliance with the Americans with Disabilities Act (ADA). Special attention should be paid to whether there is access to public transportation, and whether there is a safe and reasonable walking distance to the meeting without obstacles such as crossing active railroad tracks or busy highways.

These efforts shall be documented for inclusion in environmental documents (RES) or in project files in eProjects, and for department wide Title VI and EJ compliance.

129.2 The Public Involvement Plan (PIP)/Communication Plan

Early in the project scoping process a Public Involvement Plan (PIP) should be developed that is appropriate for each project. A PIP is a strategy document which guides outreach activities for a project. It helps to establish the schedule, methods, and locations for public outreach and assists with determining project stakeholders. For Programmatic Categorical Exclusion (PCE) and CE2 classifications, the PIP is often developed by the Project Manager (PM), district staff including Communications staff (CR Division), and/or project consultant, if applicable, and approved by MoDOT staff (PM, CR, etc.). The project core team (EPG 104.1 (http://epg.modot.org/index.php/104.1_Core_Team)) typically develops the PIP for larger, more complex projects, especially those requiring an EA or EIS, which are approved by FHWA. The nature and complexity of the project along with the core team's specialized knowledge of any sensitive issues within the project area will determine the best course of action to gain public input into the development of the project's scope (EPG 104.8 (http://epg.modot.org/index.php/104.8_Public_Involvement_in_Project_Scoping)). After identifying potentially affected populations and the issues they may have with the proposed project, this information can be compiled in the PIP (see sample above). It may become necessary to revise the PIP as a project evolves, conditions change, oppositional groups emerge, public controversy develops, or new issues arise. The size, scope and complexity of a project will help determine the extent of outreach and engagement for a project and whether a project requires a more formalized and comprehensive PIP. The PIP becomes part of the official project record and should be uploaded to the Request for Environmental Services (RES) or to eProjects as evidence of planned public involvement.

Early use of demographic data can help identify the public to be involved. After determining who to involve, a variety of outreach methods can be selected to encourage the most effective public involvement. Outreach could include either directly or indirectly any or all the following:

- adjacent property owners and tenants
- low-income populations
- minority populations
- cooperating and participating agencies (EPG 127.14.5 NEPA Glossary (http://epg.modot.org/index.php/127.14_National_Environmental_Policy_Act_(NEPA)_Classification_and_Documents#127.14.3_Process))
- local, state, and federal government staff and elected officials
- community groups such as clubs, civic groups, business groups, environmental groups, labor unions, disability advocacy groups, and churches
- commuters and the traveling public
- emergency and utility service providers
- adjacent billboard owners and clients
- general public and others known to be affected
- others expressing interest.

The following are examples of common outreach methods that can be identified in the PIP:

- Virtual Public Involvement (VPI) meetings
- public and open house meetings
- MoDOT project e-mail alert lists
- drop-in information centers or booths
- surveys or questionnaires
- advisory committee and group meetings
- public hearings
- design workshops/charettes
- direct mail/email
- meetings with public officials
- individual (one-on-one) meetings
- meetings with community groups
- internet blogs
- project Internet pages/news releases
- established media relations and contacts
- telephone hot lines.

In addition, MoDOT provides information to the public about traffic impacts as part of its Transportation Management Plan (TMP) for projects (EPG 616.13.6.6 (https://epg.modot.org/index.php/616.13_Work_Zone_Capacity,_Queue_and_Travel_Delay#616.13.6.6_Public_Information)). MoDOT also provides general work zone information to the public through various outlets. These include, among other things, publication of a statewide work zone map and work zone driving safety tips, posting of current work zone locations and conditions to the internet, promotion of Work Zone Safety Awareness Week, and advertisement of work zone safety-related messages via radio, television, electronic message boards along the roadway and, billboards. These details can also be incorporated in the PIP.

The example PIP or a more detailed plan shall be utilized on all EA and EIS classified projects. Use of a PIP on all other projects should be evaluated by the core team members of that project individually depending on the needs of that project.

129.3 “Virtual” Public Involvement (VPI)

A “virtual” public event is one that is held online, in which members of the public attend the meeting and participate remotely. A virtual public event may be held in the following two situations: (1) as a *supplement* to an in-person public

Temporary Virtual Public Involvement During the COVID-19 Pandemic

FHWA will temporarily permit all public involvement activities previously conducted in-person to exclusively use virtual technologies

meeting or hearing, or (2) as a *substitute* for an in-person public meeting for emergency situation and beyond, as defined at EPG 129.12 Glossary of Terms. The following process is designed to provide guidance when a public meeting is required. This process can be adapted to fit the needs of the project. **If a NEPA required public hearing is mandated during a time of emergency, a virtual public event can be used to supplement the in-person component of the public hearing.** Refer to the box immediately to the right for information about virtual public involvement.

and techniques that fulfill the essential purposes of the in-person public involvement during the COVID-19 pandemic. A Q&A Sheet about temporary virtual public involvement is available.

Public hearings or opportunities for public hearings are required for EISs and for projects that require substantial amounts of new right of way as (defined under EPG 129.5.3.3 Design Public Meeting).

Notice of a virtual public event must comply with the requirements in EPG 129.6.1 Advertisement for Public Hearings or EPG 129.5.1 Advertisement for Public Meeting or the Opportunity for a Public Meeting and EPG 129.6.2 Procedures for Conducting Public Hearings or EPG 129.5.2 Procedures for Public Meetings depending on the requirement. This shall include the requirement to develop and implement strategies to address Environmental Justice populations and Limited English Populations (LEP) where such populations are identified in the project area. Consultation with FHWA may be appropriate. Notice of a virtual public event must also include the following:

- clear instructions about how to attend and participate in the virtual portion of the public hearing (providing a specific webpage);
- an explanation of how the virtual public event will be conducted; and
- a statement that members of the public may, as an alternative to logging-on to the virtual portion of the public hearing, call or email district or project staff to ask questions about the project, access project materials, and submit public comments via email or letter.

- Participants in a virtual public event may be asked to enter their name and email address when commenting on a project or when asking to be added to a project contact list.
- A virtual public event must present the web address for a website where project materials will be posted for public viewing during and after the virtual public event.
- A virtual public event can include a presentation in accordance with EPG 129.6.2 Procedures for Conducting Public Hearings. The presentation will include both audio and visual components. The presentation must indicate that participants may submit comments via email or letter or some other method. The presentation may be pre-recorded and uploaded for viewing at the scheduled public hearing time, and thereafter. A best practice is to set up an email address specific to that project to receive comments. Closed captioning should be used in all virtual meetings.
- The presentation must explain to participants in the virtual public event that they may call project staff during regular office hours or email project staff to ask questions about the project at any time in the project development process.
- Following the presentation, the virtual public event can include a comment period for members of the public to call a telephone number to verbally provide testimony.
- Strategies for communicating with LEP populations during the virtual events must be developed, including providing interpreters, if needed or requested, if that is the only public involvement being carried out.
- A transcript of the presentation given in the virtual public event must be prepared if the event is substituted or a component of a hearing.
- To the extent it is technologically feasible, the virtual public event should be recorded and posted on-line until at least the end of the allotted comment period. See the paragraph immediately following for further guidance on recording and posting.
- Following a virtual public event, the post-event activities set forth in EPG 129.6.2 Procedures for Conducting Public Hearings and EPG 129.6.4 Presentation for Location and Design Approval to the Commission and Commission Actions Needed will apply.

If a virtual event is recorded, the recording is then an open record under the Sunshine Law and must be retained according to the records retention schedule. Privacy concerns can be alleviated by announcing verbally, during the beginning of the virtual event, that the event is being recorded and will later be available at a predetermined location or by request. Additionally, a disclaimer at the beginning of the video should state that the opinions expressed during the event do not necessarily reflect the opinion of MoDOT or Commission (or consultant) and do not necessarily constitute MoDOT or Commission policy.

Selecting VPI Tools

Consider the needs of residents, commuters, and stakeholders when selecting VPI tools. Use familiar channels to inform the public about opportunities to comment and how to receive and view information. If possible, collect or request contact information and follow up comments or questions. Develop a PIP to help identify these tools.

Table 129.3, Selecting VPI Tools

VPI Tool	Description	Selection Criteria	Asynchronous or Synchronous*	Cost
Project Website	The project website should be the hub for public involvement. Many tools listed below can be added to the project website, clearly communicating the pathways for public engagement.	Update and inform large groups and individuals. Repository of all project information.	Asynchronous	No cost
Webinars and Virtual Meetings	Virtual meetings can be coordinated and streamed live with Microsoft Teams Live event. Attendees can join by computer, telephone, or Teams phone app. The meeting recording can be added to the project website and MDOT YouTube channel and shared on social media. Closed captioning should be used.	Update and inform large groups and individuals.	Synchronous	No Cost
Fillable Comment Form	This is a Word or PDF document with several options for submission. It can be emailed or printed and mailed. It can contain open-ended survey questions. SurveyMonkey or a Microsoft Form can also be used. Can also place on a web page.	Offers a structure for comments and questions. Can be used to develop a project contact list while obtaining input. Can be used as basis for Q&A document or website.	Asynchronous	No cost
Narrated PowerPoint	This is a great tool for sharing project updates. The PowerPoint can be saved as a video and added to the project website; availability of the video can be communicated through social media and shared in a press release.	Project and construction updates.	Asynchronous	No cost
YouTube	MoDOT has a YouTube channel where a meeting can be livestreamed or posted on the web for later viewing.	Comments can be turned on or off; if turned on, then must respond either live during the event or later if posted on the web.	Asynchronous	No cost
Online Surveys for Title VI	Surveys are useful for collecting Title VI data and can be incorporated into virtual meetings.	Must be used at all virtual public meetings. Share a link in the announcements section of public meetings.	Asynchronous	No cost
MetroQuest Surveys	MetroQuest or similar tools are excellent for public engagement.	Use with statewide or large projects. Great for reaching commuters and younger age groups on purpose and need and alternatives selection.	Asynchronous	High cost
Telephone Townhall	Telephone townhalls work well when internet access is limited; or when trying to engage people who do not use	Alternative to Microsoft Teams. Public can register in advance and only	Synchronous	Moderate cost

	the internet. Cost for these services vary.	need a telephone to participate. Meeting materials and transcripts are available.		
Social Media	Use in coordination with other strategies.	Share meeting notices in advance and day-of on social media channels. Useful for quick and immediate information sharing.	Asynchronous	No cost for posting. Social media ads can be purchased.
Public Access Cable TV	Meeting recordings and/or Narrated PowerPoints can be broadcast.	Great companion strategy used in coordination with other tools. Internet connection is not needed.	Asynchronous	No cost to moderate cost
Drive-In Meetings	Identify a location with strong Wi-Fi and designate it as a place for people to park and log into a virtual meeting. This strategy can be used to distribute information and for in-person meetings if sound and presentation equipment is available.	Excellent alternative to virtual meetings in areas with limited internet access.	Synchronous	Moderate cost
* Note: Synchronous VPI allows for a dialogue between individuals on either side of the virtual connection whereas asynchronous VPI is passive communication where an individual connects and is limited either to reading or seeing information and/or posting a comment, versus asking a question or making a comment and having it responded to in real time. Asynchronous does not allow direct dialogue. See FHWA's Virtual Public Involvement website (https://www.fhwa.dot.gov/planning/public_involvement/vpi/).				

129.4 Public Involvement Based on Environmental Document Type

MoDOT Environmental and Historic Preservation staff coordinate with the FHWA to determine the level of environmental documentation for a proposed project. This determination is based on impacts and their intensity (i.e., significance) and therefore additionally influences the public involvement effort for a given project. It is important that MoDOT's Environmental and Historic Preservation Section be involved in the development of public meeting materials for all types of classifications in order to avoid any pre-decisional language, and FHWA in particular for EA and EISs. If there is anticipated controversy for a proposed project, the PM will discuss the potential for controversy with MoDOT's Environmental staff and FHWA to determine if additional action should be taken. (Refer to EPG 127.14.5 for full definition.)

Sign-in at public meeting

129.4.1 PCE

A Programmatic Categorical Exclusion (PCE) is the lowest level of environmental documentation and is assigned to projects with limited impacts, such as limited to existing pavement or within existing right of way, therefore lacking project impacts. These projects tend to be non-controversial and require a minimal amount of public involvement (see Table 129, Public Involvement by Type) usually including routine methods such as news releases, posting on MoDOT's website, social media, etc. that may be carried out by staff in various divisions. In most cases a PIP is not needed but any comments and responses from public involvement using any other outreach must be documented in the project files or the RES.

129.4.2 CE2

A documented Categorical Exclusion (CE2) is an environmental classification that requires FHWA approval and a more rigorous evaluation of impacts. These projects must have documented public involvement but in most cases a PIP may not be needed. At the minimum, a public notice with a comment period, must be afforded to the public. Any comments and responses from public involvement using any outreach must be documented in the project files and the RES.

129.4.3 Environmental Assessment (EA)

Visuals at public meeting

The NEPA and Federal Highway Administration (FHWA) regulations, 23 CFR 771, require a public hearing or opportunity for a public hearing at a convenient time and place for the public to participate in any Federal-aid projects which requires significant amounts of right-of-way, substantially changes the layout or functions of connecting roadways or of the facility being improved, has a substantial adverse impact on abutting property, otherwise has a significant social, economic, environmental or other effect, or for which the FHWA determines that a public hearing is in the public interest; an opportunity for public involvement in defining the purpose and need and the range of alternatives, for any action subject to the project development procedures in 23 U.S.C 139. A public hearing or opportunity for a public hearing is expected to occur after FHWA has approved the EA. If a public hearing is not held, the document must still be made available for public inspection for 30 days in accordance with 23 CFR 771.119 (e)(f) and EPG 129.5 Public Meetings and 129.6 Public Hearing. Once a Finding of No Significant Impact (FONSI) has been issued, a notice of availability of the FONSI shall be sent to all agencies and made available upon request by the public.

The PIP detailing the coordination and scheduling for an EA is developed early in the scoping process after project initiation. This plan is developed by the Project Manager and CR staff or consultant and approved by MoDOT staff, to coordinate agency and public participation in the document development and is part of the administrative record.

129.4.4 Environmental Impact Statement (EIS)

When MoDOT, in consultation with FHWA, has determined that an EIS will be prepared, a notice of intent (NOI) is published in the Federal Register (40 CFR 1508.22). A PIP detailing the coordination and scheduling for an EIS is developed early in the scoping process, prior to publication of the NOI. Public involvement is begun to get input on the purpose and need, alternatives, project schedule and other information for the NOI content. This plan is developed by the Project Manager and CR staff, or consultant, and approved by MoDOT staff, to coordinate agency and public participation in the document development and is part of the administrative record. The EIS is a level of documentation for projects that have the potential to result in significant environmental impacts.

The draft EIS must contain a summary of agency and public comments up to that point and for that summary to include a request for public comment. Once the draft EIS is prepared and signed, it shall be circulated for comment of not less than 45 days in the Federal Register. In addition, a public hearing or an opportunity for a public hearing must be held during this time. The draft EIS must be made available at the hearing and for a minimum of 15 days in advance of the hearing. If the hearing is not held, a notice shall be placed in a newspaper similar to a public hearing notice that advises where the draft EIS is available to review, how copies may be obtained, and where the comments should be sent. If the FEIS and ROD will be combined, the draft EIS should include a notice on the cover sheet (40 CFR 1502.11) stating a combined document will be issued. The draft EIS should identify a preferred alternative, but if not, there may need to be additional opportunity for public and agency input on the preferred before the FEIS and ROD can be combined.

The final EIS is then prepared after consideration of comments received and shall identify the preferred alternative, evaluate all reasonable alternatives, discuss substantive comments received on the draft, summarize public involvement, and describe mitigation measures. The final EIS shall be transmitted to any persons, organizations, or agencies that made substantive comments on the draft or requested a copy, no later than the time the document is filed with the EPA. A notice of availability shall also be published in local newspapers and through DOT Order 4600.13, as well as having a copy available for public review at institutions such as local government offices, libraries, etc. as appropriate. Executive Order (EO) 13807, One Federal Decision (OFD), also establishes required coordination with other agencies. OFD sets a government-wide goal of reducing to two years the average time for each agency to complete the required reviews and authorization decisions for a “major infrastructure project”.

129.4.5 Re-evaluations

Public involvement needs must also be reconsidered during the re-evaluation phase of a project if substantial time has elapsed since the last outreach effort and/or if the project changes warrant additional outreach. Changes might include additional project impacts to resources or to the public that weren’t initially considered. At the minimum, a public notice with a comment period, must be afforded to the public. Any comments and responses from public involvement using any outreach must be documented in the project files and the RES.

129.4.6 Agency Scoping Meetings and Coordination

Meetings with interested governmental agencies are held on all projects with an environmental classification of EIS and EA, and some CE2s, unless prior consent is obtained from FHWA. Agency scoping meetings are held prior to the preparation of the location study/environmental report but following the preparation of the draft Purpose and Need document and the preliminary screening.

Coordination with other agencies and groups is an integral part of the environmental process. Pertinent information obtained from pre-location meetings, agency scoping meetings or other coordination is made available to the public as a part of the public hearing. An up-to-date list of agencies and their addresses is available from the Design Division, Environmental and Historic Preservation section staff.

At these meetings, the general nature of the proposed project is described, and comments are solicited from the agencies. Comments should be solicited and documented in the project file concerning the project's purpose and need, the range of alternatives and their impacts on the environment. Issues that cause little or no concern should receive less attention and time. The MoDOT Project Manager or districts’ consultant for the project, working through the environmental representative in the Design Division, is responsible for arranging this meeting, which shall include a FHWA representative.

Prior to the meeting, the district supplies the Environmental and Historic Preservation office and FHWA with copies of the draft documents along with any other pertinent information concerning the proposed project the district intends to mail or email to all appropriate agencies. Once approved, the district mails or emails materials, with the meeting time and location, and invitation including a map showing the study area.

Environmental and Historic Preservation Staff at Cuivre River meeting

The scope of the project is presented at the meeting. The MoDOT Project Manager facilitates the meeting and briefly presents the project Purpose and Need. Other topics unique to the specific project are presented and discussed. It may be appropriate to provide a general overview of known environmental and cultural constraints including a presentation of constraints (e.g. parks) sensitive or specific resources) provided by the MoDOT environmental and historic preservation specialist in attendance. Prior to the meeting, coordination must occur between the MoDOT Project Manager, district staff, FHWA, MoDOT environmental, Design Division, and consultant staff, if applicable, must occur to ensure appropriate materials and format are developed as all groups have a role in the meeting.

129.5 Public Meetings

A public meeting does not have the same requirements as a public hearing. Public meetings do not require any formal presentation and are tailored to meet department or community needs. There are different types of public meetings that MoDOT holds including Pre-Location Study Meetings, Location Study Meetings and Design Meetings.

The MoDOT Project Manager (PM) is responsible for identifying the level of public involvement needed for a project. This includes scheduling and coordinating public involvement meetings in collaboration with the district communications (CR) manager and in cooperation with the Central Office Design Division for all projects, including those in which consultants are used. Adequate and appropriate MoDOT staff should be available to answer questions from the public during the meeting. Normally this includes the District Engineer, Project Manager, Area Engineer, CR manager, civil rights staff, and the project designer(s). Other staff, such as Environmental and Historic Preservation staff or Right of Way staff, should be included on a project-by-project basis. The Design Division is consulted when it is necessary for specialists from the Division to attend the meeting. If consultant staff are involved in the preparation of the project, appropriate members of the consultant team should also attend.

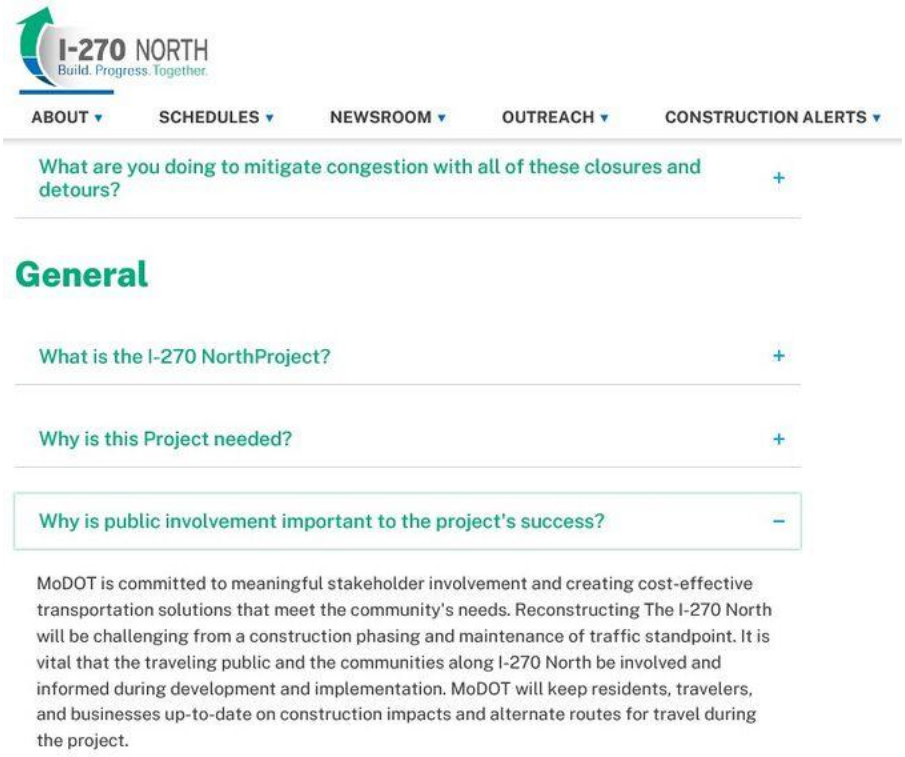
Public meetings can range from large informational presentations to small groups or one-on-one meetings with individuals. The “open-house” style is in an easy-to-navigate space where the public can come and go at their convenience. It allows members of the public to discreetly ask questions and talk with project representatives about their needs, concerns, and ideas. Visual aids, displays, and handouts are often provided as well as a station where public comments can be submitted for consideration. Displays in general should have the project title at the top of each board (i.e. Route H Bridge Replacement, Lincoln County). Open house meetings can be effective for introducing a proposed project to the public and stimulating an exchange of ideas. Small group meetings are useful for gaining information from community groups, underrepresented groups, neighborhood groups and advisory committees. Additionally, having the ability to utilize workshops, where large groups are organized into small discussion groups, serves to maximize the participation of all attendees while discouraging domination by a few groups or individuals. These small group meetings are not generally advertised to the general public; however, a summary of informal meetings shall be included in the project documentation in the RES, eProjects and the Administrative Record (if applicable).

129.5.1 Advertisement for Public Meeting or the Opportunity for a Public Meeting

Notices concerning public meetings or the opportunity for a public meeting will be published in local newspapers, on social media and on the district's website at a minimum. The PM in cooperation with the CR manager drafts the notice to be published for the meeting or opportunity for the meeting. Notices should contain the project description, time, date, ADA and/or LEP accommodations and location of the meeting, as well as where project information can be viewed. The notice should contain language such as, "if assistance is needed in another language, please contact the (contact listed in the notice) by (date)", or something more generic like "We are committed to providing equal access to this event for all participants. If you need a reasonable accommodation, please contact (contact listed in the notice) by (date)." Additionally, if the project area is known to speak a language other than English and the project impacts that population, the district will document how accommodations were made such as disseminating the public notice in that language as well. This information can be found by going to data.census.gov (https://data.census.gov/cedsci/) and reviewing table B16001 and C16001 for a specified geographic location and the most recently available survey – either the ACS 5-Year Estimates or latest decennial census data. Additional assistance with this website and the tables can be obtained from MoDOT's External Civil Rights (EC) Division. The PM can find the latest language contracts at Interpreter and Translation Contracts (http://sp/sites/EC/programs/TitleVI/Forms/AllItems.aspx?RootFolder=%2Fsites%2FEC%2Fprograms%2FTitleVI%2FLimited%20English%20Proficiency%2FInterpreter%20and%20Translation%20Contracts&FolderCTID=0x0120007ECE07E5E0136B478E798E936AFA790C&View=%7B790BCE5D%2DD835%2D4AD1%2D9CBF%2D795EA5874ED5%7D). If an opportunity is published and the district receives no requests for a meeting, they document the opportunity for public meeting notice and that no requests were received.

The information on the notice should also be available on the district's website. Information from public meetings can be made available online as virtual public meetings through the district's website. (Refer to EPG 129.3).

If the district believes other methods of advertising a public meeting would help increase public attendance, these options should be explored. Options may include direct patron mailings, flyers posted in high-traffic public areas, neighborhood newsletters, signs erected in the project area, or other means.



Major Project webpage

If the "open house" format is to be utilized, this procedure is explained in the notice. The notice of public meeting specifies that maps, drawings, appropriate environmental documents, other pertinent information developed by the department and written views received as a result of coordination with other agencies or groups, will be available for public inspection (CFR 771.111 (https://www.law.cornell.edu/cfr/text/23/771.111)). A copy of the notice shall be kept in eProjects or on CR Division sharepoint site.

129.5.2 Procedures for Public Meetings

Public meetings are to be held at a place and time generally convenient for persons affected by the proposed undertaking and should be close to the project area. When selecting the time and location of the meeting, special consideration will be given to making the setting comfortable and accessible for all, including minority and disadvantaged populations (see EPG 129.1 Environmental Justice, ADA, LEP and Title VI). MoDOT's PM and CR manager is responsible for determining the information to be provided and style of the meeting. The PM will coordinate with other appropriate staff including the MoDOT environmental representative, when necessary to ensure a productive and informative meeting.

The following are informational types of items that might be included in the meeting materials:

- The proposed project's purpose and need.
- Describe the proposed project's conformity with the goals and objectives of the area.
- Describe the problem to be addressed, why MoDOT is the appropriate agency to address them, and the reasonable process MoDOT will follow or has followed to come to a solution.
- Communicate the potential project impacts to the community and the efforts that would be made to minimize and/or mitigate those impacts (23 CFR 771.111(2)(v) (https://www.law.cornell.edu/cfr/text/23/771.111)).
- Include information such as crash data, structural deficiencies, and capacity problems.
- Public requests may be cited as justification for the project.

It is the Project Manager's responsibility to document everything (e.g. notices, comments, how comments are being addressed, commitments developed as a result of comments, all PI material), and then provide them to MoDOT Environmental for all Classes of Actions, including PCEs.

129.5.3 Types of Public Meetings

Essentially, MoDOT manages all types of public meetings similarly by providing a public meeting notice, conducting an open-house-style format, and obtaining comments from the public. The Commission directs MoDOT to conduct public involvement prior to Commission approval of Location and Design for significant projects. (Refer to Commission policy 010-10-01-HWYS (https://www.modot.org/media/31629).)

129.5.3.1 Pre-location Study Meeting

A pre-location study meeting is a type of public meeting that may be necessary for an EA or EIS environmental classification, prior to the preparation of a location study (LS)/environmental report (EPG 126 Location Study and Alternatives Analysis).

The purposes of a pre-location study meeting are to describe the general nature of the proposed project to the public, and to obtain comments concerning the project's purpose and need, the range of alternatives and their impact to local communities and the environment of the area. The pre-location study meeting should help to determine the details of community values, goals and objectives and other areas of special interest of which the local citizens may be aware including history, archaeology, geology, biology, and public lands in the study area. The draft Purpose and Need, as accepted by FHWA and the Design Division, is furnished at the meeting for consideration and comment by the public to help define the Purpose and Need under 23 USC 139 (https://www.law.cornell.edu/uscode/text/23/139). Comments and information received at the meeting will be used to refine or expand the draft Purpose and Need prior to its inclusion as a section of the Location Study Report (http://epg.modot.mo.gov/index.php?title=Category:126_Location_Study_and_Alternatives_Analysis).

Prior to the pre-location study meeting date, preliminary scoping, and screening and early constraint identification for wetlands, cultural resources, public use areas, etc., must be completed. Preliminary scoping may include scoping meetings for complex projects or written agency correspondence for less complex projects as determined by the Design Division and FHWA. The information from the screening and constraint identification is presented to the public at this meeting as it can limit potential for alternatives.

Displays available at the pre-location study meeting should be general in nature showing the entire study area with no definite solutions identified. Typically, one display should demonstrate all environmental and cultural constraints identified except the archaeological sites, threatened and endangered species, and caves. These are considered sensitive information and are not revealed to the public. Other displays might include information from the Purpose and Need concerning crash rates, and capacity and/or deficiencies of the existing facility. To assist the public in understanding the process, a display may be provided (http://epg.modot.mo.gov/files/a/a1/129.1_Display_of_Alternatives.jpg) showing the general process for completing a location study/environmental report with the pre-location study meeting stage highlighted. For projects where relocation of a route might be an option, it is helpful to provide a blank display on which the public can draw suggested alignments. The public can also identify potential environmental impacts such as family cemeteries, underground storage tanks, etc. This display and all meeting materials must be included in the environmental documentation (administrative record, eProjects, RES) as well as a summary, and any written comments and responses provided.

Comments and recommendations from the meeting will be used by the district to refine the purpose and need for the project, develop the range of reasonable alternatives, and develop the location study/environmental report.

129.5.3.2 Location Public Meeting

A location public meeting is held to provide the opportunity for effective participation by interested persons in discussing specific location features, including the social, economic, environmental and other effects of all the reasonable project alternatives. These meetings afford the department an opportunity to receive information from sources that will be of value in choosing a preferred location. Location public meetings are typically part of the EA and EIS process but could be held for a CE2 or PCE as well. It may be acceptable to hold a combined location and design public meeting for CE2 projects. A summary of the meeting is submitted to the state design engineer for location approval of a PCE and CE2 projects in the form of a Conceptual Study Report. For location approval of EA and EIS processes, Commission approval is needed. When a location public meeting is to be held for an EA or EIS, it is typically held after FHWA approves the EA or Draft EIS for public review. In the case of an EIS project, once the draft EIS is signed, a notice of availability (NOA) is published by the Environmental Protection Agency (EPA) once they receive the approved draft EIS in Washington D.C. The district may then advertise for the location public meeting. For a project with an environmental classification of CE2, a location public meeting may be held after the conceptual plan is approved.

129.5.3.3 Design Public Meeting

A design public meeting is offered for projects where input from the public is needed on the design of a proposed project, regardless of environmental classification. The design public meeting should be considered by the PM for projects that substantially change, temporarily or permanently, the function of the roadway or may have an impact on the use of the roadway. A meeting will be considered, even if not "required", if the impact on the traveling public, adjoining property owners and businesses in the area is considered to be substantial. Additional consideration should be given for large projects, those that have many parcels or heavy public interest. Additionally, a design public meeting should be considered anytime a project impacts alignment (vertical or horizontal), impacts the roadway typical section, changes permanent traffic control infrastructure (stop control to signal control), minor right of way impacts, impacts other modes of

transportation, road closures or detours (impacts to users are significant), potential environmental impacts, significant public interest in the project, controversial projects, major project that don't require public hearings, cost share or cost apportionment projects in which we have other partners in delivering a project, projects that will be long in duration (more than one season to complete), etc. One principal indicator for when a design public meeting should be considered would be on projects that require a preliminary plan.

This is left to the discretion of the District Engineer, in consultation with the PM. A meeting may be desirable to advise local officials, EMS, school districts (bus routes), motor carriers (OWOD permits), adjacent property owners and other users of the details of the project. For instance, bridge replacement projects that close the road during construction should have a public meeting or opportunity for a public meeting to inform the public of the closure. If a public meeting is not held, reasons should be well-documented in eProjects. If the projects involves Noise, Section 106, Section 4(f) or Section 6(f) lands, the Design Public Meeting can contribute to the requirements of those issues. (See EPG 129.7 Noise Wall Public Meeting and Voting, EPG 129.8 Section 4(f) Lands and EPG 129.9 Section 106 and Tribal Consultation). A "virtual" design public meeting can be substituted for a design public meeting.

These criteria are considered a minimum level for which a public meeting or opportunity for a meeting is required. Authority to conduct the design public meeting is given with the District Engineer's approval of the preliminary plans. At design public meetings, the preliminary plans and other exhibits from the location study are displayed. Pertinent information about the location alternatives studied and reasons for selecting the proposed location are discussed. Details of the effect of the proposed design on individual properties are discussed along with information about the design alternatives studied.

A meeting will be considered, even if not "required", if the impact on the traveling public, adjoining property owners and businesses in the area is considered to be substantial. Additional consideration should be given for large projects, those that have many parcels or heavy public interest. This is left to the discretion of the District Engineer, in consultation with the PM. A meeting may be desirable to advise local officials, EMS, school districts (bus routes), motor carriers (OWOD permits), adjacent property owners and other users of the details of the project. A summary of the meeting is submitted to the state design engineer for design approval and housed in eProjects.

129.6 Public Hearing

Temporary Virtual Public Involvement During the COVID-19 Pandemic

FHWA will temporarily allow all public involvement activities previously conducted in-person to exclusively use virtual technologies and techniques that fulfill the essential purposes of the in-person public involvement during the COVID-19 pandemic. A Q&A Sheet about temporary virtual public involvement is available.

Public hearings have federal requirements, such as a legal advertisement, prescribed time for notice before the hearing, and a full account of all comments, along with the department's response to those comments. Public hearings or opportunities for a public hearing are required for any Federal-aid project that "requires significant amounts of right-of-way, substantially changes the layout or functions of connecting roadways or of the facility being improved, has substantial adverse impact on abutting property, otherwise has a significant social, economic, environmental or other effect, or for which FHWA determines that a public hearing is in the public interest." (Refer to 23 CFR 771.111 (https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0771.htm)). Refer to the box immediately to the right for information about virtual public involvement.

Formal public hearings consist of an opening statement, a period for statements and questions from the public, and a closing statement. The following is a list of actions and statements that take place at all formal public hearings:

- The public hearing is conducted in a business-like manner, with questions answered as completely and unbiased as possible.
- The following statement will be made at all hearings: "This project is being processed in accordance with federal rules and regulations. Plans will be subject to review by FHWA. If federal funds are used in right of way acquisition and/or construction, the percentage of federal funds used will be in accordance with current regulations".
- The tentative schedule of right of way acquisition and construction is mentioned. It is limited to a statement that once design approval is received, the department will proceed with design and right of way acquisition and construction will take place when funds are available. A statement is included that the improvement under consideration is on the State Transportation Improvement Program (STIP).
- Projects requiring a public involvement hearing due to facility expansion of a route must have a presentation of the proposed acquisition plan for the attendees and provide the “Pathways for Progress” (http://sharepoint/sites/de/RealEstate/Brochures/PathwaysforProgress_Final.pdf) brochure and “Residential Relocation Brochure” (http://epg.modot.org/forms/RW/Chapter%208_Relocation/Residential%20Relocation%20Brochure.docx) or “Business Relocation Brochure” (http://epg.modot.org/forms/RW/Chapter%208_Relocation/Residential%20Relocation%20Brochure.docx). The "Pathways for Progress" brochure explains the various steps in acquisition of property required for a highway project. If the proposed project is approved, you may be contacted by a representative of the department at the beginning of the acquisition process and all features in this brochure will be discussed in detail with each property owner.

- In the event the project requires relocations services, the public will be informed regarding the relocation assistance procedures and the process involved in relocating. The “Business Relocation Brochure” or “Residential Relocation Brochure” explain relocation benefits for displaced property owner(s) in detail to prepare for the individual meetings with MoDOT staff. In addition to this statement, it is necessary to discuss the number of individuals, families, businesses, etc. that may be relocated by the project under consideration; and whether studies indicate there is adequate replacement housing available. If sufficient comparable replacement housing is not available, we must indicate that we are committed to provide last resort housing. It is also necessary to state that no one will be displaced from their residence unless an appropriate replacement dwelling is available or provided.

Buck O'Neil Bridge Public Hearing

Informal or “open house” type of Public Hearings is a style that is in an easy-to-navigate space where the public can come and go at their convenience. The “open house” style allow members of the public to discreetly ask questions and talk with project representatives about their needs, concerns, and ideas. Visual aids, displays, and handouts are often provided as well as a station where public comments can be submitted for consideration. Open house meetings can be effective for introducing a proposed project to the public and stimulating an exchange of ideas.

The following is a list of possible displays and/or handouts to inform the public about a project at the public hearing:

- The proposed project’s purpose and need, goals, objectives and problems or solutions.
- Communicate the potential project impacts to the community and the efforts that would be made to minimize and/or mitigate those impacts (see 23 CFR 771.111(2)(v) (https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0771.htm)).
- Information such as crash data, structural deficiencies, and capacity problems.
- Proposed project schedule.
- Projects requiring a public involvement hearing due to facility expansion of a route must have a presentation of the proposed acquisition plan for the attendees and provide the “Pathways for Progress” brochure and “Residential Relocation Brochure” or “Business Relocation Brochure”. The "Pathways for Progress" brochure explains the various steps in acquisition of property required for a highway project. If the proposed project is

approved, you may be contacted by a representative of the department at the beginning of the acquisition process and all features in this brochure will be discussed in detail with each property owner.

- In the event the project requires relocation services, the public will be informed regarding the relocation assistance procedures and the process involved in relocating. The "Business Relocation Brochure" or "Residential Relocation Brochure" explain relocation benefits for displaced property owner(s) in detail to prepare for the individual meetings with MoDOT staff. In addition to this statement, it is necessary to discuss the number of individuals, families, businesses, etc. that may be relocated by the project under consideration; and whether studies indicate there is adequate replacement housing available. If sufficient comparable replacement housing is not available, we must indicate that we are committed to provide last resort housing. It is also necessary to state that no one will be displaced from their residence unless an appropriate replacement dwelling is available or provided.

129.6.1 Advertisement for Public Hearing or Opportunity for a Public Hearing

Notices concerning public hearings will be published as a legal notice in a newspaper having general circulation in the vicinity of the proposed project. Additional paid advertisements are encouraged to ensure maximum public input. Notices of public hearings shall have a description of the project, specify the date, time and location of the hearing as well as where to find the project documents for viewing. Refer to 23 CFR 771.119(d-f) and (h) (https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0771.htm) and EPG 129.4.3 Environmental Assessment (EA) for timelines related to an EA.

The public hearing is to be held at a place and time generally convenient for persons affected by the proposed undertaking and close to the project location. In addition to publishing a notice of public hearing, the district provides news releases to the newspaper and social media at the same time as the official notice is published and again approximately 5 to 12 calendar days prior to the date of the hearing. The district will also place the news release on their website. The news releases generally contain the same information included in the official notice. An email notification is sent through e-updates or other email distribution lists for the proposed project area. The notice shall contain language such as, "if assistance is needed in another language, please contact the (contact listed in the notice) by (date)"),," or something more generic like "We are committed to providing equal access to this event for all participants. If you need a reasonable accommodation, please contact (contact listed in the notice) by (date)." Additionally, if the project area is known to speak a language other than English and the project impacts that population, the district will document how accommodations were made such as disseminated the public notice in that language as well. This information can be found by going to data.census.gov (https://data.census.gov/cedsci/) and reviewing table B16001 and C16001 for a specified geographic location and the most recently available survey – either the ACS 5-Year Estimates or latest decennial census data. Additional assistance with this website and the tables can be obtained from MoDOT's EC Division. The PM can find the latest language contracts at Interpreter and Translation Contracts (http://sp/sites/EC/programs/TitleVI/Forms/AllItems.aspx?RootFolder=%2Fsites%2FEC%2Fprograms%2FTitleVI%2FLimited%20English%20Proficiency%2FInterpreter%20and%20Translation%20Contracts&FolderCTID=0x0120007ECE07E5E0136B478E798E936AFA790C&View=%7B790BCE5D%2DD835%2D4AD1%2D9CBF%2D795EA5874ED5%7D).

In addition to the news releases, specific notification by letter of meetings is made to impacted property owners, business owners, service providers (sheriff, police, fire, schools, post office, emergency, etc.) community leaders, planning commission representatives, local representatives of state and federal resource agencies and any special interest groups, where they can be present or set up displays if they have projects going on in the area for which public questions are anticipated. The districts maintain a mailing list so interested agencies, local officials, groups or individuals are sent a notice of the public hearing by mail/email.

If the district believes other methods of advertising a public hearing would help increase public attendance, these options should be explored. Options may include direct patron mailings, flyers in public areas, signs erected in the project area or other methods.

If the open house format is to be utilized, this procedure is explained in the notice. The notice of public hearing specifies that maps, drawings, appropriate environmental documents, other pertinent information developed by the department and written views received as a result of coordination with other agencies or groups, will be available for public inspection (CFR 771.119 (https://www.ecfr.gov/cgi-bin/text-idx?SID=501c79f3d47331fb90d292fffe21e053&node=se23.1.771_1119&rgn=div8)). The notice also specifies this information is available in the appropriate district office and FHWA. If appropriate, the documents can also be placed at some other convenient location such as a courthouse, city hall or library for public inspection and/or copying.

The information is also to be made available on the district's website. The public hearing information should include pdfs of the materials presented at the public meeting and provide an online comment form option if running concurrent with the hearing.

By federal statute, the notice of public hearing is published a minimum of 15 calendar days prior to the date of the hearing, however, MoDOT prefers to publish the notice 21 days prior to the date of the hearing. The draft notice is sent to FHWA, Design Division Environmental Section, and the core team for approval. The notice shall be included in eProjects, or CR Division Sharepoint site for project documentation.

If, in the judgment of the District Engineer, with input and approval from FHWA, a public hearing is not expected due to unknown events, the district shall advertise the opportunity for a public hearing at the start of the 30-day comment period. Additionally, letters to individual property owners, business owners, service providers (sheriff, police, fire, schools, post office, emergency, etc.) and other interest groups can be distributed. In addition to or instead of the information required for the notices and news releases described above, the notice of opportunity for a public hearing includes instructions concerning how to request a public hearing. All requests for a hearing must be in writing and must be acknowledged in writing by the District Engineer. Any comments requesting a public hearing and how they were addressed will be incorporated into the EA.

This notice is published as either a paid advertising notice or a legal notice, or in a more commonly viewed section of the newspaper and submitted as a news release and other common ways to advertise. This notice advises the public of a deadline for the request for a public hearing and comment period. The deadline for submission of a request to hold a public hearing is 21 calendar days, however, the public may still comment on other aspects of the project for a full 30 calendar day period.

If a request is received, the district may contact the individual to discuss their concerns with the project and potentially remedy the request. The person making the request is allowed 14 calendar days to withdraw their request in writing. A public hearing is held if the request is not withdrawn.

If the district receives no requests for a hearing, they document the opportunity for public hearing notice and certify that no requests were received. The public is still afforded the opportunity to comment during the normal comment period. This documentation and certification is forwarded to the Design Division.

129.6.2 Procedures for Conducting Public Hearings

The district conducts the public hearing with assistance from the Design Division. Two procedures may be used to conduct public hearings: the traditional formal speaker-audience format, or the open house format. The selection of format is at the discretion of the District Engineer with assistance from the Design Liaison Engineer and PM and should be based on an analysis of the project's specific conditions. This analysis must include consideration of minority and low-income populations, with the goal of using a format that proactively engages these populations. The recommended open house

format tends to be comfortable for a wider variety of people. The open house format will still require a court reporter on hand to transcribe and record official comments, which then become part of the official transcript. In the event a court reporter is not used, the district shall still be required to document written and verbal comments from the public.

At a public hearing, the following must be provided: project purpose and need; information demonstrating consistency with local urban planning goals and objectives; project alternatives and major design features; social, economic and environmental impacts; relocation assistance program and the right of way acquisition process; and MoDOT's procedures for receiving written and oral public statements (see CFR 771.111 (https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0771.htm)).

I-270 Public Meeting

Preparation of all exhibits and displays is the responsibility of the district, in coordination with MoDOT Environmental and FHWA, and will be retained for possible use at future meetings. The exhibits of the project area will be of sufficient quality and scale so property owners can clearly identify their property. Multiple sets may also be appropriate if anticipating large crowds. It is recommended that a wide corridor be shown but not design features, since these are subject to change. Additional exhibits showing traffic, crash, environmental, economic, or other data will also be displayed. They should show all known constraints, both environmental and engineering. Typically, these include one display showing all environmental and cultural constraints identified except the archaeological sites, threatened and endangered species and caves. These are considered sensitive information and are not displayed for the public. This display and all meeting materials must be included in the environmental documentation (administrative record, eProjects, RES) as well as a summary, and any written comments and responses provided.

129.6.3 Transcripts

The district is responsible for the preparation of an accurate written transcript of the oral proceedings and verbal input of each public hearing whether formal or open house style. This may include the use of a tape recorder, a court recorder, or any reliable method that will assure a verbatim transcript to record comments from the public. Shorthand notes are not adequate. Recordings are retained as part of the administrative record and kept with the project file. Public comments expressed at the hearing but not recorded will also be noted. One copy of the transcript is prepared in the district office for submission to the Design Division and FHWA.

The transcript is created and saved in eProjects and must also include the following summary contents in this order:

- Executive Summary that describes and discusses issues identified at the hearing or during the open comment period. No recommendations are included in this summary.
- Project information handout
- Double-spaced transcript of any oral hearing proceedings
- Color location map(s) showing the alternate locations presented (location public hearing only) or the location of the recommended design (design public hearing only)
- Data pertinent to statements or exhibits used or filed in connection with the public hearing
- Data pertinent to information made available to the public prior to the public hearing
- Pertinent correspondence

- Copy of all written comments received and substantive comments addressed.

The following material will not be included in the hearing transcript but must still be maintained as part of the administrative record in the project file:

- Data pertaining to newspaper advertising. This covers the descriptive notice as well as letters to newspapers requesting publication of a public hearing notice.
- Informative letters to FHWA.
- Letters to agencies, interested parties and tribes concerning notification of a public hearing and listing of agencies so notified except where Section 4(f) and Section 6(f) lands are affected.
- List of names of people attending the public hearing.
- Plan sheet prints or similar large material bulky in nature unless they can be conveniently included.
- Other data such as copies of letters from the Central Office, listing of information made available to the public prior to the public hearing, etc.
- Preliminary plans used as exhibits at the public hearing.
- Right of way or relocation brochures.
- Additionally, a Commission Backup Form (http://epg.modot.mo.gov/forms/DE-DEForms/Commission%20Backup%20Form%20Blank.dot) is submitted with the Letter of Transmittal by email from the District Engineer to the Design Division. The Letter of Transmittal and Commission Backup Form are not made a part of the transcript. The Letter of Transmittal addresses any substantive comments from the public hearing and includes the number of people who attended, recommendations, and general project information. The Letter of Transmittal from the District Engineer will also certify that the public hearing was held in accordance with all applicable rules and regulations, and that the department has considered possible social, economic, and environmental effects of the proposed improvement together with its conformity with local planning goals and objectives.

For EA and EIS projects, the Design Division sends FHWA a copy of the transcript so substantive issues to be addressed in the EA decision document or Final EIS can be considered prior to submittal of the document for FHWA's approval. FHWA must approve the FONSI or Record of Decision (ROD) prior to Commission approval of the location. The Design Division will provide a copy of the transcript, with executive summary, to FHWA for their review and comment. No department recommendation will be provided to FHWA at this time. FHWA will provide comments to the department concerning the issues identified as a result of the public hearing. Their comments will be considered in the development of the department's recommendations to the Commission. It is desirable that the submission of the transcript and executive summary to the Design Division be made within a reasonable period (usually less than two months) after the public hearing.

Prior to submitting the transcript to the Design Division, the district makes the transcript and related material available for public inspection and copying at the district office.

The Commission Backup Form and final transcript will be saved in eProjects by the district.

In the event a scheduled public hearing is not held, a letter conveying information pertaining to the scheduled hearing will suffice in lieu of a transcript.

129.6.4 Presentation for Location and Design Approval to the Commission and Commission Actions Needed

Commission approval of the location or design of an improvement is required for the following:

- The location of all projects classified as an EA or an EIS.
- The design of all projects requiring total additional right of way and permanent easements greater than 20 acres in rural areas or 100,000 square feet in urban areas.
- Controversial projects.

Commission policy requires public involvement be carried out for those projects that meet the above thresholds. A procedure governing the presentation of information to the Commission for location or design approval following a public hearing or meeting is stated below. Location, design, and combined location and design public hearing transcripts are submitted to the Design Division through email. The district must receive Commission approval at this stage before further development of the plans can be accomplished.

MHTC Meeting

- The district submits one copy of the transcript or documentation from the public involvement plan, together with the executive summary, Commission Backup Form and location sketch for the Commission exhibit, to the appropriate design liaison engineer in the Design Division (https://modotgov.sharepoint.com/sites/DE/).
- The transmittal letter must include the district's recommendations concerning how to address the issues identified as a result of the public involvement.
- The DLE will then submit the information via e-mail addressed to "Commission Exhibit".
- For each item placed on the monthly Commission agenda, any conflict of interest for the Commissioners must be established. A Commission property layer is available on TMS maps (http://tmsmaps/) for easy review (Under STIP and Commissioner Property Detail). A MHTC Agenda Item Checklist must be included for any agenda item for which there is a conflict (i.e., a Commissioner owns property within one mile (1.6 km) of the project). The SIMS Reports: MHTC Agenda Checklist and MHTC Agenda Checklist for Design can be used to identify known property conflicts. Additionally, District Right of Way and Chief Counsel's Office can provide information on potential conflict of interest areas for projects within the district. In the event a possible conflict does exist, the MHTC Agenda Item Checklist identifies the name of the Commissioner and the location of the property of concern. This information is provided for the Commission Secretary and Chief Counsel's Office use. If no conflicts exist, the e-mail must indicate that no conflict of interest exists.
- To properly schedule hearing information for presentation to the Commission for design approval, the district will provide the information to the Design Division according to the Commission meeting schedule requirements (http://sp/sites/de/Admin/Schedules/agenda%20checklist-backup%20schedule%20for%202020.pdf). This will allow for a two working-day review and ensure the item has been thoroughly discussed before it is placed on the Commission agenda.
- If a difference of opinion develops between the Design Division and the district concerning recommendations to the Commission, the director, the chief engineer, or the asst. chief engineer will be consulted to reach consensus. The recommendation provided to the Commission indicates the department's formal determined position and not that of a single district or division.
- With the information received from the district, the Design Division will ensure the item is placed on the Commission agenda and Commission backup (http://epg.modot.mo.gov/forms/DE-DEForms/Commission%20Backup%20Form%20Blank.dot) is provided to the Commission. Based upon this information, the Design Division will place the item on the regular or consent portion of the meeting agenda. In doing so, a consistent format will be maintained for the Commission's benefit.
- When the item is placed on the Commission's regular agenda (because of controversy or public interest), the District Engineer will attend the Commission meeting and present the item for approval. If the item is placed on the Commission's consent agenda, it is preferred the District Engineer attend the meeting to answer questions from the Commission in the event it is transferred to the regular agenda.

Following Commission action, the Design Division will prepare the necessary Commission minutes.

After the Commission has approved the location of the proposed improvement, design beyond preliminary design of the project may continue. FHWA must approve the FONSI or ROD prior to Commission approval of the location. After the Commission has approved the design of the proposed improvement and the District Engineer has approved right of way plans developed in accordance with EPG 236 Right of Way, acquisition of right of way may begin.

129.7 Noise Wall Public Meeting and Voting

For projects with noise impacts where noise abatement is both reasonable and feasible, a noise wall public meeting is required. Refer to EPG 127.13.8 Noise Wall Public Meeting and Voting for guidance.

129.8 Section 4(f) Lands

Section 4(f) of the Transportation Act of 1966 specifies that a transportation project requiring the use of publicly owned parks, recreation areas, wildlife and waterfowl refuges, and other considerations as determined by FHWA, or publicly or privately-owned historic sites listed or eligible for listing on the National Register of Historic Places can be approved only if there is no feasible and prudent alternative or is a de minimis impact to using that land and if all possible planning is done to minimize harm to the property. These types of properties are often referred to as Section 4(f) resources (refer to EPG 127.10 Section 4(f) Public Lands).

The level of public involvement required for Section 4(f) properties is dependent on how the use of the property will be documented for approval by FHWA. The Environmental and Historic Preservation Section must be consulted for appropriate public involvement for Section 4(f) properties.

For parks, recreation areas, or refuges, when there is a specific or isolated population that uses the Section 4(f) property, a more direct contact approach such as targeted mailing can be used. When it is unknown who uses the property, or the users come from a much larger geographic area, the public involvement requirement may involve a public meeting and/or hearing. If a public meeting or hearing will be used to satisfy the public outreach requirements of Section 4(f), be sure to clearly disclose such in the meeting or hearing notifications and advertisements. Refer to 23 CFR 774.5 (b)(2)(i) (https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx). For historic properties, public notice and comment, beyond that required in 36 CFR 800, is not obligatory. Refer to (23 CFR 774.5 (b)(1)(iii)) (https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx).

Historic de minimis

For historic de minimis the public involvement process mirrors the Section 106 public involvement process. Refer to EPG 129.9.

Parks, recreation areas, wildlife and waterfowl refuge de minimis

Parks, recreation areas, wildlife and waterfowl refuges shall have, at a minimum, a public notice and an opportunity for public review and comment. If the project does not require a public meeting, other means must be made to provide the public information on the Section 4(f) resource, impacts on it, and an opportunity to comment on the proposed de minimis determination. The notice shall be a minimum 10-day public notice and comment period and looks similar to the public meeting advertisement. Consult your CR manager for what is most appropriate for the area in question. This information can be made public through a press release in a newspaper, social media posts, comment cards left at the facility, sign-boards, hand-outs, etc. The notice should consider the resource and how the users of that resource are most likely to be reached. The public notice or opportunity for comment may be combined as part of other public involvement for the project, such as for NEPA, if the proposed impacts and findings related to the Section 4(f) properties have been determined.

If a public meeting is held, the materials at the public meeting should include information that identifies parks as Section 4(f) properties, identifies the characteristics of any parks in the project area, and include that a de minimis determination will be sought under 23 CFR 774.

The 4(f) evaluation shall be provided to the official with jurisdiction (OWJ) over the 4(f) property for coordination and comment. The OWJ(s) cannot approve the use of the property until after the public comment period has ended and public feedback has been provided. Any comments shall be addressed in the de minimis documentation. The public feedback must be provided to the OWJ(s) for consideration as part of the evaluation. The de minimis evaluation form, maps, OWJ concurrence, and the public involvement materials are submitted to FHWA for comment and approval. The materials are then included in the NEPA administrative record and/or the RES for the project.

Programmatic Evaluation

The project shall include public involvement activities that are consistent with the specific requirements of 23 CFR 771.111, Early coordination, public involvement and project development. For a project where one or more public meetings or hearings are held, information on the proposed use of the Section 4(f) property shall be communicated at the public meeting(s) or hearing(s).

Temporary Occupancy There are no regulatory requirements for public involvement for the temporary occupancy of a Section 4(f) resource. If a Section 4(f) resource will be used in such a matter, and it is known prior to a public meeting, the public meeting should include information on the Section 4(f) resource and the nature of impacts and how the resource will not be permanently damaged by the project.

Individual Section 4(f)

If an Individual Section 4(f) Evaluation is part of an EA or EIS, the draft Section 4(f) is included in the document which is made available for the public, and the public comment periods and methods overlap. For an EA or EIS, the draft Section 4(f) Evaluation must be included in the EA or draft EIS (DEIS) and FHWA must approve the draft Section 4(f) Evaluation as part of the approved EA or DEIS before the location public hearing can be held. The approved draft Section 4(f) Evaluation is provided to the U.S. Department of the Interior (DOI) for comment. A 45-day public comment period runs concurrently with the DOI review and comment. Typically, the notice is similar to a public meeting advertisement. For EISs, this occurs automatically with circulation of the DEIS. The environmental specialist circulates the approved Draft Section 4(f) Evaluation accompanying an EA or separate Section 4(f) Evaluations prepared for projects classified as CEs to DOI for comment. A Final Section 4(f) Evaluation that addresses any substantive comments is included with the Finding of No Significant Impact (FONSI) or Final EIS (FEIS).

If the project is a CE, there is a 30-day public comment period during the 45-day DOI review period, usually they end on the same date. A notice about the availability of the document is placed in the local newspaper and MoDOT website, an electronic copy of the document is placed on the project website, and a hard copy is placed in a local repository (city hall, county courthouse or public library). For CE projects, the environmental specialist prepares a separate Final Section 4(f) Evaluation. Comments should be sent by letter to the District Engineer. FHWA approval of the Final Section 4(f) Evaluation is integrated with location approval, which allows detailed design to begin.

129.9 Section 106 and Tribal Consultation

Section 106 of the National Historic Preservation Act requires that the public be offered the opportunity to receive information about and comment on the project's effect on historic properties. Section 106 also requires a federal agency to notify the public of proposed projects and offer the public an opportunity to provide input in a timely manner. The project's impacts on historic properties should be identified and discussed at public meetings. Documentation of public input or knowledge regarding these impacts is required in eProjects or the RES. A member of the public with a

demonstrated interest in an undertaking may request and receive consulting party status from the federal agency. The district should work with the Historic Preservation Section to coordinate HP involvement in public meetings when there are historic properties present on a project.

Below is the guidance provided by the Advisory Council on Historic Preservation on what are the minimum standards for public involvement, public notice and information standard (36 CFR PART 800 (https://www.law.cornell.edu/cfr/text/36/part-800) 2(d) & 6(a)(4)):

> "At a minimum, the Agency Official has to provide an opportunity for the public to examine the results of the agency's effort to identify historic properties, evaluate their significance and assess the undertaking's effects upon them. When adverse effects are found, the Agency Official must also make information available to the public about the undertaking, its effects on historic properties and alternatives to resolve the adverse effects and must provide the public an opportunity to express their views on resolving adverse effects. The precise method of meeting these standards is left up to the Agency Official and may be guided by other applicable agency public involvement procedures. The agency can adjust the level and method based on the circumstances of the undertaking, as provided for in Sections 800.2(d) and 800.6(a)(4)."

> "At a minimum, public notice should be designed to effectively inform the public about the nature of the undertaking, its effects and the public's likely interest in it. As for information, the documentation standards of Section 800.11 set requirements for the record at various steps in the process. These materials should be available to the public, unless constrained by legitimate confidentiality concerns. Other than Section 800.11's documentation standards, there is no special prescribed public notice and information standard for Section 106. Efforts to inform the public for other planning and environmental review purposes should be a guide to adequate efforts to meet Section 106 needs."

Besides the public, Section 106 also requires federal agencies to consult on a "government-to-government" basis with federally-recognized tribes and nations with ancestral, historic, and ceded land connections to Missouri to facilitate avoiding or minimizing project impacts to cultural resources that a tribe considers of historical or religious significance. Consultation means the process of seeking, discussing, and considering the views of others, and where feasible, seeking agreement with them on how historic properties should be identified, considered, and managed. The federal government's unique relationship with tribes is derived from the U.S. Constitution, treaties, Supreme Court decisions, federal statutes, and executive orders. The Federal Highway Administration cannot delegate its government-to-government responsibility and overall consultation and coordination duties. However, if a tribe agrees in advance, FHWA may rely on MoDOT to carry out day-to-day, project-specific coordination and consultation. FHWA remains legally responsible for all findings and determinations.

129.10 Railroads

The district advises all railroads in the affected project area by sending a notice to the railroads' chief engineers when the project affects railroad lines, railroad yards or industrial properties belonging to the railroad. Preliminary layouts through yards or industrial areas are discussed with the railroads to ensure their current plans are not in conflict with the proposed project. This is done in coordination with the Multimodal Operations Division (http://sharepoint/systemdelivery/mo/Pages/default.aspx).

129.11 Public Involvement for Storm Water

Refer to EPG 127.29.5 Public Involvement for Stormwater.

129.12 Glossary of Terms

Categorical Exclusion (CE): A category of actions that based on past experience with similar actions, do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal Agency pursuant to the National Environmental Policy Act (NEPA), and for which neither an environmental assessment or an environmental impact statement is required. They are actions which: do not induce significant impacts to planned growth or land use for the area; do not require the relocation of significant numbers of people; do not have a significant impact on any natural, cultural, recreational, historic or other resource; do not involve significant air, noise, or water quality impacts; do not have significant impacts on travel patterns; and do not otherwise have any significant environmental impacts either individually or cumulatively.

Emergency situation: A health or other emergency situation as declared by the Governor, and/or President, and/or a local government jurisdiction which determines an in-person public hearing and/or in-person inspection of documents should be limited out of concerns for public health and/or safety, and/or MoDOT in coordination with FHWA determines that an in-person public hearing should not be held out of concerns for public health or safety.

Environmental Assessment (EA): A concise public document prepared in compliance with the National Environmental Policy Act (NEPA), that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI).

Environmental Impact Statement (EIS): A detailed written statement required by section 102 (2) (C) of the National Environmental Policy Act (NEPA), analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources.

Finding of No Significant Impact (FONSI): If after the completion of an EA it is determined there will be no significant impacts on the quality of the environment, a finding of no significant impact (FONSI) will be prepared to conclude the process and document the decision.

Limited English Proficiency (LEP): Individuals who cannot speak, read, write, or understand the English language at a level that permits them to interact effectively.

Location Study: Prepared to determine the most advantageous location for a proposed highway improvement based on project purpose and need and on engineering and environmental constraints. The location study and the environmental analysis are developed concurrently.

Low-Income: A person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

Low-Income Population: Readily identifiable groups of low-income persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient person (such as migrant workers or Native Americans), who will be similarly affected by a proposed DOT program, policy, or activity.

Major Infrastructure Project: An infrastructure project for which multiple Federal authorizations will be required to proceed with construction, the lead Federal agency has determined that it will prepare an EIS under NEPA, and the project sponsor has identified the reasonable availability of funds sufficient to complete the project.

Minority: A person who is:

(1) Black: a person having origins in any of the black racial groups of Africa;
(2) Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
(3) Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
(4) American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or
(5) Native Hawaiian and Other Pacific Islander: people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Minority Population: Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient person (such as migrant workers or Native Americans) who will be similarly affected by a proposed Department of Transportation (DOT) program, policy or activity.

National Environmental Policy Act (NEPA): Requirement of Federal agencies to assess the environmental effects of their proposed actions prior to making decisions. Under the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions and provide opportunities for public review and comment on those evaluations. NEPA applies to a broad range of federal actions that include, but are not limited to, constructing highways and other publicly owned facilities, adopting federal land management actions, and federal permitting.

Notice of Intent (NOI): A notice published in the federal register that an environmental impact statement will be prepared and considered.

Pre-Location Study Meeting: A meeting conducted for projects that require an EA, EIS, or CE2 held prior to the preparation of a location study/environmental report or conceptual study, or a CE2 to gain public input on the draft purpose and need, the range of alternatives and the impact on the local communities and the environmental of the area.

Programmatic Agreement (PA): A document that spells out details the terms of a formal, legally binding agreement between a state DOT and other state, local and/or federal agencies.

Programmatic CE (PCE): An agreement between FHWA and the State DOT to make Categorical Exclusions (CE), (most of which are listed under 23 CFR Part 771.117(d)), more efficient and faster. The PCE agreement allows the State DOT to document, review, and approve CEs without requiring FHWA Division Office review in order to proceed to the next step of the project development process.

Public Hearing: 23 U.S.C. 128. A public gathering for the express purpose of informing and soliciting input from interested individuals regarding transportation issues.

- A formal hearing consists of an opening statement, a period for statements and questions from the public, and a closing statement.
- An open house format public hearing is one where the public can come and go and are able to ask questions of project representatives as well as a station where public comments can be officially recorded. Visual aids, display and handouts are often provided.

Public Involvement (PI): An integral part of the transportation process which helps to ensure decisions are made in consideration of and to benefit public needs and preferences. It involves seeking public input at key points in the decision-making process where such input has a real potential to help shape the final decision or set of actions. This includes early and continuing opportunities during project development for the public to be involved in the identification of social, economic, and environmental impacts, as well as impacts associated with relocation of individuals, groups, or institutions.

Public Involvement Plan (PIP): An announced meeting conducted by transportation officials designed to facilitate participation in the decision-making process and to assist the public in gaining an informed view of a proposed project at any level of the transportation project development process; also, such a gathering may be referred to as a public information meeting.

Public Meeting: A public gathering for the express purpose of informing and soliciting input from interested individuals regarding transportation issues.

Purpose and Need: A clear and well documented section of an EIS or EA or some CEs defining the need for the project and how that need will be fulfilled. The purpose and need drive the development of the range of alternatives.

Virtual Public Involvement (VPI): The use of digital technology to engage individuals or to visualize projects and plans.

APPENDIX E – SPCC Report

MoDOT HAZARDOUS MATERIALS INFORMATION SHEET

GENERAL INFORMATION

DATE OF ACCIDENT
_____

PD (K#) _____
Get pd number from safety office

LOCATION OF ACCIDENT
(Highway, Milemarker, Bridge#, etc.)

_____

COUNTY: _____

_____

SPILL INFORMATION

MATERIAL _____

QUANTITY _____

LOCATION _____
(Road, Shoulder, Ditch, etc)

HAZMAT TIMES

TIME OF ACCIDENT: _____

TIME CALLED OUT: _____

ARRIVED:_____

COMPLETED: _____

PHOTOS

TAKEN BY:
_____

WEATHER CONDITIONS

TEMPERATURE: _____

WIND DIRECTION: _____

FORECAST: _____

_____

NOTIFICATION CHECKLIST

(Names)

HIGHWAY PATROL:
_____

DNR (name): _____

(case #):_____

FIRE: _____

POLICE: _____

SHERIFF: _____

LEPC: _____

ELECTRIC: _____

SEWER: _____

MoDOT: _____

OTHER: _____

PARTY

DRIVERS INFORMATION

NAME: _____

DRIVER'S LIC # / STATE: _____

ADDRESS, CITY, ZIP: _____

PHONE: _____

COMPANY INFORMATION

NAME: _____

ADDRESS, CITY, ZIP: _____

PHONE: _____

CONTACT PERSON(S): _____

COMPANY INSURANCE INFORMATION

NAME: _____

PHONE: _____

CONTACT PERSON: _____

ASSISTANCE NUMBERS

MDNR/ 24 HR EMERGENCY#
(573) 634-2436

Haz Mat Coordinator:

David Taylor
OFFICE # (660) 385-8258
CELL # (660) 346-8370

Back Ups:
Andrea Bland
OFFICE # (660) 385-8254
CELL # (660)-365-8074

Brady Bogeart
OFFICE # (660) 385-8259
CELL # (660)-676-0680

ENVIRONMENTAL SPECIALIST

Kevin A. Kelly
573-526-2904 (Office)
573-410-2182 (Cell)

CHEMTREC (HERBICIDES)
(800)424-9300

DIG RITE (800) 344-7483

INCIDENT DIAGRAM

DIRECTION
N
W ---- E
S

WIND
DIRECTION
N
W ---- E
S ____ MPH

DESCRIPTION of what you did

_____

_____

_____

_____

_____

_____

_____

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SIGNATURE DATE

APPENDIX F – EPG 127.25.8.3

Contact individual county planning and zoning offices for areas requiring compliance. Trade wastes are defined as solid, liquid, or gaseous material resulting from construction or the prosecution of any business, trade or industry or any demolition operations including, but not limited to cardboard, plastics, cartons, grease, oil, chemicals or cinders. Trade wastes include scrap lumber and wooden shipping pallets. Refuse is defined as garbage, rubbish, trade waste, leaves, salvageable material, agricultural wastes or other wastes.

Reason for Policy: Comply with State Regulations Air Pollution Control Law and Regulations 10 CSR 10-6 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c10-6a.pdf), Air Pollution Control Program RSMo 643 (https://revisor.mo.gov/main/OneSection.aspx?section=643).

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.8.2 Lead Mining Chat

Lead mining chat encapsulated in asphalt or concrete, may be used for highway construction. Special requirements apply to chat from the Tri-State Mining District (Jasper, Newton, Lawrence and Barry Counties in southwest Missouri) as referenced in . Refer to Missouri Standard Specifications for Highway Construction 1001.12 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=14). For additional information see EPG 127.25.8.2.1 Abrasives.

Reason for Policy: MDH Health Study established to protect the health of workers and persons living along roadways. Air Pollution Control Law and Regulations 10 CSR 10-6, Air Pollution Control Program, RSMo 643 (https://revisor.mo.gov/main/OneSection.aspx?section=643), 40 CFR 260-265 (http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr260_main_02.tpl), 40 CFR 268 (http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr268_main_02.tpl), RSMo 260 (https://revisor.mo.gov/main/OneSection.aspx?section=260), 10 CSR 25-4.10 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c25-4.pdf).

Effective Date: 8/28/2015

Revision Dates:

127.25.8.2.1 Abrasives

The maximum aggregate size for abrasives shall not exceed 3/8 inch. Lead mining chat (within established limits) may be used for general maintenance purposes. See 127.25.8.2 Lead Mining Chat, for requirements for chat from the Tri-State Mining District. See Missouri Standard Specifications for Highway Construction Sec 1001.12 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=14) for established lead limits in mining by-product aggregates.

For additional information see EPG 127.25.8.2 Lead Mining Chat.

Reason for Policy: Experience has shown that an aggregate size larger than 3/8 in. is ineffective and contributes to broken windshields. Mine tailings may contain environmentally unsafe materials.

Effective Date: 6/1/99

Revision Dates: 6/17/03, 9/25/15

127.25.8.3 Sewage Disposal System

Where a sewage system at a present maintenance site is being modified or when a sewage system is being designed for a new facility, the department shall consider the feasibility of connecting onto a publicly owned waste water treatment plant (POTW). If it is not economically feasible to connect to a POTW, an on-site sewage treatment system shall be considered. The required construction permit (http://dnr.mo.gov/forms/780-2189-f.pdf) shall be obtained from the Missouri Department of Health or the Missouri Department of Natural Resources, Water Pollution Control Program, prior to construction. For additional information see EPG 127.25.8.3.1 Industrial and Domestic Waste Waters on Right of Way.

Reason for Policy: RSMo 701.025 - 701.059 (https://revisor.mo.gov/main/OneSection.aspx?section=701) State Standards, RSMo 644 (https://revisor.mo.gov/main/OneSection.aspx?section=644) Water Pollution Control Program, Federal Clean Water Act 33 U.S.C. 1251-1387 (http://www.gpo.gov/fdsys/granule/USCODE-2011-title33/USCODE-2011-title33-chap26-subchapI-sec1251/content-detail.html).

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.8.3.1 Industrial and Domestic Waste Waters on Right of Way

Sewage and waste shall be disposed of by discharging into a sewer system regulated pursuant to chapter 644, RSMo, or shall be disposed of by discharging into an on-site sewage disposal system operated as defined by rules promulgated pursuant to sections 701.025 to 701.059, RSMo. Any person installing on-site sewage disposal systems shall be registered to do so by the Missouri Department of Health and Senior Services (http://health.mo.gov/index.php).

Private homeowners are regulated by the Missouri Department of Health and Senior Services. The Missouri Department of Health and Senior Services is to be contacted when wastewater discharge from private homeowners is found on right of way. If a property owner requires assistance in containing effluent, they should be directed to the Department of Health for assistance.

Commercial businesses and industries are regulated by MDNR (http://dnr.mo.gov/). When wastewater discharge from a regulated entity is discovered on MoDOT right of way, the Environmental Specialist will contact MDNR to determine if the commercial business or industry has a valid operating permit issued by MDNR to discharge effluent.

The Environmental Specialist will request MDNR to take whatever legal action necessary concerning any business or industry that does not have a valid permit from MDNR to discharge effluent to the highway right of way.

For additional information see EPG 127.25.3.1 Rest Area Lagoon, EPG 127.25.8.3 Sewage Disposal System and EPG 127.25.8.3.2 System Attachments by Others.

Reason for Policy: RSMo. 701 (https://revisor.mo.gov/main/OneSection.aspx?section=701)

Effective Dates: 6/1/99

Revision Dates: 12/27/12, 10/27/15

127.25.8.3.2 System Attachments by Others

Piped connections to the drainage system are prohibited unless approved by the district engineer. In situations where connections are permitted, plans and specifications are required to meet MoDOT specifications. If approved, the work shall be done under an approved permit and/or a Missouri Highway and Transportation Commission Agreement.

Attachments to bridges and large box culverts that qualify as bridges should be referred to the Bridge Division for review. Connections to MoDOT's drainage system should be reviewed for compliance under MoDOT's MS4 stormwater permit.

For additional information see EPG 127.25.8.3.1 Industrial and Domestic Waste Waters on Right of Way and EPG 127.29.4.3 MCM 3.

Reason for Policy: Protect MoDOT from possible litigation. Protect the current drainage system.

Effective Date: 6/1/99

Revision Dates: 12/27/12, 10/27/15, 11/30/15

127.25.8.4 Vehicle Placarding

Department vehicles transporting regulated quantities of hazardous waste shall be placarded. MoDOT is exempt from placarding asphalt distributors and product shipments.

Reason for Policy: 49 CFR 105 (http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr;sid=68a3027b802cf7b31b57de42b86e7dee;rgn=div5;view=text;node=49%3A2.1.1.1.2;idno=49;cc=ecfr)-177 U.S.DOT, 10 CSR 25-6.010 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c10-6a.pdf), Missouri Hazardous Waste Regulations

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.8.5 Fugitive Dust

The department shall operate in a manner that minimizes and/or prevents fugitive dust from going beyond MoDOT property lines or off right of way. Dust from operations such as concrete sawing, crack and joint repair, street sweeping and roadway rotomilling shall be contained on department property.

Reason for Policy: 10 CSR 10-6.170 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c10-6a.pdf), Air Pollution Control Program. Provide driving conditions free from dust obstructions.

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.8.6 Vehicle Painting

A permit may be required for vehicle painting using power spray operations at maintenance buildings. When required, such permits shall be acquired prior to initiation of painting operations. Painting with a brush or touch up painting with an aerosol can does not require a permit.

Reason for Policy: 10 CSR 10-6.020 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c10-6a.pdf), Air Pollution Control Program

Effective Date: 6/1/99

Revision Dates: 10/27/15

APPENDIX G – EPG 771.2 Bridge Cleaning and Flushing

771.2 Bridge Cleaning and Flushing

Code: R329

Bridge cleaning and flushing is done to remove dirt and debris to allow proper drainage and drying of the deck. The dirt and debris holds moisture and chlorides that cause deterioration. Deck flushing should be done throughout the winter months when needed and temperatures safely permit. Thorough cleaning of entire bridge should be accomplished in the spring following snow season and again in the fall prior to snow season. This cleaning should include deck, piers, abutments, and lower chords of truss bridges.

Contents

Procedures

1. Set up proper traffic control.

2. Removal of dirt and debris shall be completed using dry methods (scraping, vacuuming, or sweeping) to prevent debris, sediments, and other substances from entering waters of the state. Dispose of dirt and debris properly. See EPG 127.25.1.4 Street Sweepings.

3. Adequate water supply and pressure is needed for effective flushing.

4. Spring and fall flushing should include all bridge items, drain system, drain basins, and under expansion devices.

Safety

Run off from flushing needs to be controlled to prevent property and environmental damage.

Guidance on Aquatic Invasive Species Control BMPs

Aquatic invasives such as zebra mussels and some algae species have infested several bodies of water in the United States and can be transported by vessels (barges, boats, tugs, tankers, etc.) and equipment that have been used in areas that contain these invasive species. If equipment is not properly inspected and treated to prevent the spread of invasives, these species can be introduced into areas not currently known to have a population. These invasive species are detrimental to existing ecosystems and can outcompete native species. To assist in preventing the introduction and spread of aquatic invasive species through MoDOT projects in Missouri streams and lakes, the following precautions shall be followed.

Contractors and MoDOT maintenance shall not take water for bridge deck flushing from Waters of the State (i.e., streams or lakes), unless they have implemented appropriate methods to prevent the possible spread of invasive aquatic species. Water sources from municipal water treatment plants or wells may be used without following these measures provided the water hauling equipment has not previously contained waters from streams or lakes. If the water hauling equipment has previously contained waters from other streams or lakes, the following measures must be implemented prior to use.

Prior to transporting temporary barges, tugs, boats, or other equipment used for work in Missouri streams or lakes, or re-using water hauling equipment following any use with water from Missouri streams or lakes, all equipment shall be washed and rinsed thoroughly with hard spray (power wash) or HOT (104° F) water, e.g. at a truck wash facility.

When possible, equipment shall be dried thoroughly, 5-7 days, in the hot sun before using in or transporting between Missouri streams and lakes.

If complete drying is not possible, one of the following treatment methods shall be utilized:

- Treat all interior and exterior surfaces with 140° F water for a minimum of 10 seconds contact on all surfaces.
- Submerge all surfaces in 100% vinegar for 20 minutes.
- Submerge in a solution of 200 ppm chlorine for 10 minutes.
- Treat all bilge water, and reservoirs holding water with a 10% bleach solution to kill any aquatic nuisance species.

All vinegar and chlorine runoff shall be contained and disposed of properly. See EPG 172.5 Wash Water for proper disposal procedures.

To avoid spreading invasive algae, check all gear and remove any visible algae, mud, and plants. Do not dispose of algae into bodies of water. Clean all gear and equipment with a solution of 2% bleach, 5% saltwater, or dish detergent. Allow all equipment to stay in contact with the solution for at least three minutes. Soak all soft items for at least 20 minutes. Dry all gear in the sun for at least 48 hours.

Prior to use of the aforementioned types of vessels, contractors shall provide the MoDOT inspector written documentation of its geographic origin (including the water body it was last used in), as well as defining the specified treatment method used to adequately ensure protection against invasive species.

Vessels and equipment shall be inspected upon removal from any body of water, cleaning hulls, anchors, moorings, trailers, etc., of all mud, vegetation, and any noticeable attached zebra mussels. This practice will assist in preventing the spread of invasive aquatic species between bodies of water. If zebra mussels are found upon inspection, immediate notification must be made to the MoDOT inspector (for contract jobs) and MoDOT Environmental (573-526-4778). A MoDOT Environmental Specialist will contact the Missouri Department of Conservation Aquatic Habitat Specialist (417-326-5189, ext. 1844).

Instructions


Set up proper traffic control. Remove all dirt and debris and ensure that all curb outlets and pipe drains are clean. Heavy buildup of dirt and debris may require removal prior to flushing. Sweeping or brooming is beneficial to supplement flushing.

Adequate water supply and pressure is needed for effective flushing.

Spring and fall flushing should include all bridge items, drains system, drain basins, and under expansion devices.

APPENDIX H – EPG 806.8 MoDOT SWPPP

806.8 Storm Water Pollution Prevention Plan (SWPPP)

Contents

806.8.1 Introduction to the Storm Water Permit and Storm Water Pollution Prevention Plan (SWPPP)

Provisions of the federal Clean Water Act and related state rules and regulations require stormwater permits where construction activities disturb one acre or more over the life of a project as part of a common plan or sale. MoDOT has a general State Operating Permit, obtained from the Missouri Department of Natural Resources (DNR) (http://www.dnr.mo.gov/), that authorizes stormwater discharges from land disturbance activities associated with highway, bridge and compensatory mitigation construction as well as maintenance activities related to the upkeep of these features. The permit stipulates that MoDOT will develop a project stormwater pollution prevention plan (SWPPP) describing erosion and sediment control guidelines and install temporary and permanent erosion and sediment control measures.

Locally sponsored federal aid projects involving an acre or more of land disturbance will need to obtain their own permits and develop effective SWPPPs. In some instances cities, counties and other government entities may already possess their own State Operating Permit and, in that case, must comply with their own SWPPP.

There are instances where contractors may have to obtain their own permits for work involving borrow and excess (waste) disposal areas, and in some instances when portable plants are used. (See Fig. 806.8.1 MoDOT/Contractor Responsibility for details about the permitting requirements of these scenarios.) Also, in a few rare cases, MoDOT may require contractors to obtain their own individual State Operating Permit for land disturbance activities even though the project is being constructed on MoDOT right of way. These unique situations will normally be design/build projects that are funded by MoDOT, but totally managed by the contractor.

The purpose of the SWPPP is to ensure the design, implementation, management and maintenance of Best Management Practices (BMPs) in order to reduce the amount of sediment and other pollutants in storm water discharges associated with the land disturbance activities; comply with the Missouri Water Quality Standards (http://www.dnr.mo.gov/env/wpp/wqstandards/wq_criteria.htm), and ensure compliance with the terms and conditions of the general permit.

Printable Version of SWPPP

EPG 806.8 SWPPP presents the very latest SWPPP information, but this PDF file may be helpful for those wanting to easily print the SWPPP information.

Forms and Figures

Fig. 806.8.1 MoDOT/Contractor Responsibility

Form 806.8.2, Project-Specific SWPPP Information (https://epg.modot.org/forms/DE/SWPPP_Project_Specific_Form_806.8.2.pdf)

Example of completed Form 806.8.2

Fig. 806.8.3, Examples of Erosion/Sediment Control Site Plans

Fig. 806.8.9 Example Erosion/Sediment Control Site Plans

Form 806.8.10 MoDOT Land Disturbance Inspection Record (http://ghepg01/forms/CO/Land%20Disturbance%20Inspection%20Record%20-%20Electronic%20Version.dotx)

Fig. 806.8.14 Example MDNR SWPPP Evaluation Form

Fig. 806.8.15 Imhoff Cone and Turbidity Tube Testing Procedures

Optional Pre-activity Meeting Form

Additional Information

Land Disturbance Training 2014, a summarized refresher presentation

The following documents were used in the preparation of this SWPPP:

- **Best Management Practices for Erosion and Sediment Control**, (Report No. FHWA-FLP-94-005) published by the United States Department of Transportation (1995)
- **Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices**, (Document number EPA 832-R-92-005) published by the United States Environmental Protection Agency (1992)
- **Protecting Water Quality: A field guide to erosion, sediment and storm water best management practices for development sites in Missouri**
- **Missouri Standard Specifications for Highway Construction (http://www.modot.mo.gov/business/standards_and_specs/highwayspecs.htm)**
- **Missouri Department of Transportation Engineering Policy Guide**
- **Menu of BMPs – United States Environmental Protection Agency** (https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#edu).

A typical MoDOT project involves the implementation of many documents, processes, and standard operating procedures. These various processes and procedures are of such detail that it is impossible to include in this brief summary of BMPs. Pollution from storm water can be reduced by the implementation of the BMPs, construction techniques and site management measures in this article. However, pollution from storm water will also be reduced by the issuance of change orders, letters/memos of notification, Order Records, and Contractor Performance Reports. Changes that occur as a result of directives to contractors will usually be documented by Document Records and other various products and reports produced by the computer program, AASHTOWARE Project (AWP). Lastly, a Semi-Final Inspection Report can serve to identify post-construction measures that will ensure permit compliance and water quality protection.

In addition to these contract management tools, MoDOT maintains training videos for storm water compliance as well as mandatory recertification requirements once every 4 years. All inspectors who will be engaged in storm water inspections, as well as all resident engineers and contractor's water pollution control managers must be certified through the training video program.

806.8.2 Site Description and Project-Specific Information

Example Project-Specific SWPPP Information Form, outlines project-specific information that is required to be completed for all MoDOT projects involving land disturbance of one acre or more or projects less than one acre that will be considered part of a common plan with offsite support activities, controlled by the contractor, that total one acre or more combined. Also required, and denoted at the bottom of Form 806.8.2, is the development of a project overview map, or maps, depicting the project location/alignment with enough detail to show waters of the United States within 1 mile of the project. These named waters of the U.S. are typically illustrated on U.S.G.S. topographic maps, and some county or city maps, as blue line streams or named impoundments, such as lakes and reservoirs, as well as tributaries to these bodies of water. Along with this information, MoDOT develops project-specific erosion and sediment control plan sheets (site maps) based on first-hand knowledge of site conditions and guidance described within this narrative SWPPP. Development of project-specific erosion and sediment control plans is described in EPG 806.8.3 Developing/Amending Project-Specific Project Plans.

806.8.3 Developing/Amending Project-Specific Project Plans

EPG 237.1 Plan Details describes the information that is to be included in all plans used by contractors to construct MoDOT projects. All projects are constructed from a set of project-specific design plans that are generated by MoDOT designers or consultants. The plans show all existing topographic features, buildings, roadways and drainages, as well as right of way limits. Within a project's design plans are erosion and sediment control plans which serve as the site maps for projects involving one acre or more of land disturbance and some projects less than an acre when considered a common plan with contractor off-site support activities such as borrow and/or excess (waste) sites. These site maps are to be used in combination with this narrative SWPPP to manage erosion and sediment control on MoDOT projects. These plans contain sufficient information to be of practical use to contractors and site construction workers to guide the installation of BMPs in the beginning, interim and final stages of construction. Up-to-date site maps are to be on location at active MoDOT job sites when work is being performed at the site. In lieu of paper copies, site maps can be maintained in digital format and accessed by electronic devices.

Though erosion and sediment control plans are developed by MoDOT designers and/or consultants, it is highly recommended that design and construction personnel work collaboratively to develop a strategy to control erosion, sediment and stormwater for applicable projects. There should generally be two sets of erosion and sediment control plans developed for projects with one acre or more of land disturbance. One set should be developed to depict existing site topography with outfall and perimeter protection BMPs, such as sediment basins, sediment traps, Type C berms, silt fence, etc., that will need to be installed prior to starting land disturbance of the site. The second set will generally show final project grade and BMPs that are envisioned during project construction and upon completion of final grading. The location of designed BMPs will be illustrated on the plan sheets; however, the exact location of BMPs will be determined in the field by the engineer or inspector.

Contract plans shall include erosion and sediment control measures that are sufficient to protect rivers, streams, lakes, ponds, wetlands and private land adjacent to MoDOT right of way.

MoDOT site maps (erosion and sediment control plans) are to include:

- An outline of the permitted site boundary (*all areas within the project termini on MoDOT R/W and all easements shown on the plans*);
- Location of public notification sign(s) (*if road is closed, place 2 or more signs - one at each entry point of the project accessible to the public*);
- Direction of stormwater flows;
- Areas of soil disturbance and areas that will not be disturbed;
- Location of permanent and temporary structural and non-structural BMPS;
- Locations where stabilization practices are expected to occur;
- Locations of borrow or waste sites within the permitted site;
- Location of all waters of the state (including wetlands)
- Locations were stormwater discharges to a water body, including discharge points at the perimeter of the permitted site;
- Locations were stormwater discharge to another regulated MS4;
- Areas where final stabilization has been accomplished and no further construction permit requirements apply.

Due to project phasing, all erosion and sediment control BMPs shown on project plans will not be installed until needed based on site conditions. Therefore, erosion and sediment control sheets will state that "all devices will be installed as necessary based on the discretion of project personnel." Inspectors may create a clean set of plans, with no BMPs depicted, as a working copy for SWPPP purposes and add/remove only installed devices as long as the original erosion and

sediment control plan sheets are included in the project specific SWPPP for reference. A legend will be incorporated to depict BMPs used in the site plan. BMPs should be highlighted and dated as they are installed or removed. It is important that site maps reflect BMPs that are actually on the ground at any given time, so plan sheets shall be properly updated each time BMP additions and/or removals take place on the project. Example erosion and sediment control site plans can be found in Fig. 806.8.3, Examples of Erosion/Sediment Control Site Plans.

The engineer shall require modifications to the erosion and sediment controls whenever the:

- Design of the construction project has changed in a fashion that could impact the quality of stormwater discharges;
- MoDOT inspections indicate deficiencies in individual BMPs;
- MDNR/EPA notifies MoDOT of erosion and sediment control deficiencies on site;
- Erosion and sediment controls are determined to be ineffective in significantly minimizing or controlling erosion and sedimentation;
- MDNR determines violations of Water Quality Standards have occurred.

The Project-Specific SWPPP Information Form, general map, and project specific erosion and sediment control plans together comprise what is considered the project specific SWPPP. The project specific SWPPP must be kept up to date and be on site whenever work is being performed. Contractors who are responsible for installation, operation, or maintenance of any BMPs also must have an up-to-date copy of the project specific SWPPP with them while they are on the project site.

806.8.3.1 Shoulder Addition Project Plan Development and Implementation

Shoulder addition projects involving land disturbance of an acre or more can be particularly challenging to design, bid and implement BMPs. Design and construction personnel should collaborate to establish typical, desired BMP layouts for outfall and perimeter protection. These layouts should then be illustrated on a “Typical” erosion and sediment control plan as detailed plan sheets are not usually developed for these projects (There are a few exceptions to this when right of way acquisition or extensive grading is required).

Like other land disturbance projects of an acre or more, shoulder addition projects are required by permit to have a site map depicting the location of all installed BMPs. If a full set of plan sheets is not developed, an acceptable alternative is to develop an aerial photography site map of the project corridor at a scale of 1” = 200’, labeling named bodies of water, intersecting routes and county roads, and labeling log miles every 0.5 mile for the project (depicting tick marks every 0.1 mile is recommended for better accuracy). If full survey data was collected for the project, the log mile stationing may be set up precisely based on survey data. Full surveys are not typical for shoulder addition projects, so a “rough” log mile stationing may be set up. The aerial map shall identify approximate BMP locations to enhance communication, illustration and documentation for inspectors and contractors. The aerial sheets will not be included as part of the contract documents but will be provided as electronic deliverables.

In addition to the “typical” erosion control detail in the contract plans, designers shall provide an estimated quantity of BMPs necessary to construct the project. The estimated quantity and location of each type of BMP shall be expressed in a table on the quantity sheet included in the contract plans for contractors.

It is important to be aware that all designed BMP quantities may have to be adjusted depending on the contractor’s selected method of shoulder construction. Any expected adjustment in BMP quantities or implementation should be expressed to the prime and subcontractor, if applicable, during the erosion and sediment control discussion at the project preconstruction conference.

806.8.4 Site Inspections and Reports

The resident engineer (https://epg.modot.org/index.php?title=Category:105_Control_of_Work#105.9_Authority_and_Duties_of_Resident_Engineer_.28Sec_105.9.29) or inspector is responsible for environmental matters on MoDOT projects. As such, the engineer or inspector shall routinely inspect the installation, condition and functionality of erosion and sediment controls. Inspections will commence once land disturbance operations begin for all projects permitted by and required to comply with MoDOT's state operating permit for land disturbance. For projects not designed to exceed one acre or are part of a common plan, if operations cause the disturbed acres to exceed one acre or more, inspections will begin once it is known the disturbance will equal one acre or more. If allowable due to right-of-way constraints, receiving streams shall be inspected for off-site sediment deposits for 50 ft. downstream of project outfalls. Inspections are only required to be conducted during the projects normal working hours, Monday through Friday. A routine inspection may be delayed until the next business day if it falls on a holiday. Routine inspections are to be conducted at a minimum frequency based on one of the following options:

1. At least once every seven (7) days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day and within 72 hours if the event ceases during a non-work day such as a weekend or a holiday; or
2. At least once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt.

    a. Inspections shall be conducted within 24 hours once a storm event has produced 0.25 inches within a 24-hour period, even if the storm event is still continuing; and
    b. If an event occurs over multiple days, each day the event produces 0.25 inches or more of rain, an inspection is required within 24 hours of the first day, within 24 hours of each day 0.25 inches of rain is produced, and within 24 hours after the end of the storm.

A 2-year, 24-hour storm event shall be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 (https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html).

It is acceptable to switch between the two inspection options as long as it is documented in the project specific SWPPP prior to switching. It is not acceptable to mix weekly and post runoff requirements between the two options.

It is critical that post runoff inspections are conducted as required for the inspection frequency selected. When utilizing the 7-day weekly inspection frequency, any event that extends over multiple days without 24-hours of dry time may be considered one event. However, general observations should be made daily, especially with regard to outfall BMPs, to ensure BMPs are performing to the desired level. If rainfall or snow/ice melt does not meet the specific criteria for the inspection duration chosen, inspection reports do not need to be completed until the next required inspection interval.

Projects with areas that have undergone temporary stabilization at the same time active construction continues (example: bridge construction, overlay work, or any non-land disturbance operation) on other areas, may change their inspection frequency to once a month while stabilized. Once areas are re-disturbed, inspection frequencies shall return to either the 7-day or 14-day inspection frequency. All changes to inspection frequencies will be documented in the project specific SWPPP.

MoDOT's Stormwater Database (https://www6.modot.mo.gov/StormWaterCompliance/Account/Login?ReturnUrl=/StormWaterCompliance) will be used for all inspections. Forms included in this database have been developed as a guide to assist the inspector with permit compliance, while also requiring a general narrative description of current site conditions observed by the inspector at the time of inspection. The inspection reports shall be certified by the inspector and the engineer. The Stormwater Database will serve as MoDOT's official log of inspections conducted for each project.

The engineer or inspector will ensure that rainfall measurements are made for the job site and routinely monitor weather forecasts to recognize when predicted weather may threaten the construction site and when runoff has occurred. If the weather forecasts indicate storms may impact the project site, project personnel should evaluate whether or not the site has adequate BMP protection and is prepared to receive runoff and sediment.

Once inspections are complete and certified, an automatic email will be transmitted from the Stormwater Database to the engineer. Once the engineer has reviewed the inspection and it is certified, an automatic email notification of the inspection is sent to the contractor's Water Pollution Control Manager. Any controls that are found to be improperly installed, in disrepair, or are not functioning at the desired level of effectiveness will be noted in the inspection as deficiencies. **Any deficiencies noted shall be corrected as soon as possible but no later than 7 calendar days from the inspection date;** however, the engineer and inspectors may require immediate attention and issue various directives by other means discussed in EPG 806.8.1 Introduction to the Stormwater Permit and SWPPP. Directives to the contractor shall be noted in project records, which shall be available for review by DNR upon request. **In instances where weather conditions make it impossible to correct deficiencies within 7 days, the engineer or inspector will document site conditions in the inspection reports. This documentation will include a written description and pictures illustrating the adverse conditions. As soon as weather and site conditions become favorable, corrections to deficient BMPs shall be made.**

MoDOT provides environmental compliance training for construction site inspectors, resident engineers, designers and other personnel, including contractors and consultants, to ensure that erosion and sediment control inspections are being conducted in a consistent fashion statewide. MoDOT's Design/Environmental Section is responsible for developing and updating the environmental compliance training. MoDOT's Construction and Materials Division is responsible for first tier oversight audits of construction projects. The Design/Environmental Section will perform statewide second tier oversight audits to ensure that SWPPPs are being followed and there is compliance with the permit.. In cases where deficiencies are identified, the resident engineer or inspector has the responsibility to see that the deficiencies are corrected.

As part of the project inspection and compliance management process, the project's current authorized and disturbed acreage totals shall be recorded in in the Stormwater Database before each weekly or post runoff inspection is documented. These acreage totals are used to fulfill MoDOT's permit requirement to provide a list of statewide active land disturbance sites, one acre or more, to MDNR on a quarterly basis, every January, April, July and October. Also included within each report is the project name, location, description, primary receiving water(s), number of acres disturbed, percent completion and projected date of completion.

Primary receiving waters are named rivers, streams, lakes, etc. (e.g., Black River, Skull Lick Creek, Flat Branch, Longview Lake). If the project doesn't drain directly to named bodies of water, the inspector should list "Unnamed Tributary". Some urban projects will discharge to city stormwater systems. In this case, if the body of water the storm drain discharges to is unknown, simply list "Municipal Storm Sewers" and identify the entity if possible (e.g., MSD Municipal Storm Sewers).

(Note: There are scenarios associated with the use of borrow and excess (waste) disposal areas, as well as portable plants, when the contractor may be responsible for site inspections. Please refer to Fig. 806.8.1, MoDOT/Contractor Responsibility, for inspection responsibilities in these scenarios.)'

806.8.5 Drainage Areas and Housekeeping

In compliance with the Missouri Clean Water Law (Section 644.051 (http://moga.mo.gov/statutes/C600-699/6440000051.HTM)), neither MoDOT nor MoDOT's contractors shall pollute any waters of the state, or place, cause, or permit to be placed any water contaminant in a location where it is reasonably certain to cause pollution of any waters of the state. To

comply with this law, proper preventive measures and good housekeeping shall be maintained on job sites. Job site litter, construction debris and sanitary waste should be controlled. All litter shall be placed in appropriate containment receptacles. The use of portable toilets may be necessary to control sanitary waste in some situations. If used, these facilities shall be adequately placed and maintained so as not to cause a safety or environmental concern. If hazardous waste is generated or encountered on a job site, the MoDOT Environmental Section, (573) 526-4778, should be informed immediately to assure proper handling and compliance with environmental regulations. Also, neither MoDOT nor MoDOT's contractors shall discharge water contaminants into any waters of the state, which reduce the quality of these waters below the state's water quality standards. These water quality standards include the following (MO 10 CSR 20-7 (http://sos.mo.gov/adrules/csr/current/10csr/10c20-7a.pdf)):

(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

(e) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

(f) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, Section 260.200, RSMo (https://revisor.mo.gov/main/OneSection.aspx?section=260.200), except as the use of such materials is specifically permitted pursuant to Section 260.200–260.247.

MoDOT personnel or contractors hired by MoDOT shall comply with these and any other federal, state, and local laws and regulations controlling pollution of the environment. To ensure that these general criteria are met, the following guidelines will be observed:

1) Machinery shall be kept out of the waterway as much as possible.

2) Fuel, lubricants, debris and other water contaminants shall not be stored in areas that are subject to contact with water (such as adjacent to stream banks) or where contaminated runoff from the storage areas can enter waters.

3) Refueling and maintenance (e.g., oil changing) of machinery shall not take place in, or directly alongside, any water body.

4) Clearing of vegetation/trees shall be kept to the minimum required to accomplish the activity.

5) Riparian areas and banks shall be restored to a stable condition through recontouring and revegetation of the area, as necessary, as soon as possible (normally within three working days of final contouring).

6) Work shall be conducted during low flow whenever possible.

7) Wetland areas shall be avoided to the extent practical.

8) Work shall conform to all conditions that are part of the USACOE Section 404 permit and the ancillary MDNR Section 401 Water Quality Certification.

EPG 127.19 Section 404 Clean Water Act for Bridge Demolitions provides a detailed explanation of the process that is followed whenever a stream or drainage channel may fall into USACOE jurisdiction.

806.8.6 Erosion and Sediment Control (MO Specifications Division 800) (http://www.modot.mo.gov/business/standards_and_specs/DIV0800.pdf)

Water pollution control measures shall be required of all contractors MoDOT hires. The contractor shall exercise best management practices throughout the project to control erosion and water pollution. Construction of permanent drainage facilities and other activities, which may contribute to the control of siltation, shall be accomplished at the earliest practicable time. This work shall also consist of furnishing, installing, maintaining, and removing temporary control measures as shown on the plans (see Standard Plan 806.10 (https://www.modot.org/media/16839)) or as directed by the engineer. The control of water pollution will be accomplished through the use of berms, slope drains, ditch checks, sediment basins, seeding and mulching, silt fences and other erosion and sediment control devices or methods. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage or other harmful materials shall not be discharged from the project. No work shall be started until the erosion and sediment control timetable and methods of operation have been approved and an on-site pre-activity meeting is conducted with the contractor and the engineer or their representative.

Temporary erosion control measures shall be coordinated with permanent erosion control measures to assure economical, effective and continuous erosion and sediment control. Temporary erosion controls must be kept in place until final stabilization has been achieved.

Materials required for erosion and sediment control measures shall meet the standards of the *Missouri Standard Specifications for Highway Construction*.

806.8.6.1 Construction Requirements

The goal for MoDOT land disturbance operations is to deliver the planned final product (e.g., roadway, bridge, etc.) while ensuring effective erosion, sediment and stormwater management throughout the design, construction and maintenance process to minimize the discharge of pollutants.

Permanent erosion control measures (e.g., permanent vegetation) shall be implemented into the project at the earliest practicable time in order to control erosion, reduce sediment control maintenance and improve the overall appearance of the project. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction which were not foreseen during the design stage. Temporary controls shall also be used when needed prior to installation of permanent erosion control measures or to control erosion that develops during normal construction practices.

When practical, clearing and grubbing operations shall be scheduled and performed so that border, perimeter, or outfall BMPs to control runoff from disturbed areas will be installed or marked for preservation before general site clearing. A limited amount of clearing (enough to gain access to the area) may be permissible to enable the installation of outfall and perimeter controls. Stormwater discharges from disturbed areas, which leave the site, shall pass through an appropriate sediment impoundment such as a sediment basin, sediment trap, or silt fence prior to leaving the site. The surface area of erodible earth material exposed at one time by clearing and grubbing, by excavating, by fill, or by borrow, shall be

minimized to limit vulnerability of erosion and potential sediment loss from the project. The engineer may limit the total acreage of erodible earth material to be exposed at one time as determined by an analysis of project conditions. In such cases the engineer will identify specific BMPs and controls that have been or will be installed in order to exceed the specified maximum disturbed acreage threshold.

The engineer will limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress commensurate with the contractor's ability to keep the finish grading, mulching, seeding, and other erosion control measures current. Should seasonal limitations make such coordination unrealistic, temporary erosion and sediment control measures shall be implemented by the contractor as directed by the engineer.

Construction operations in rivers, streams, wetlands, and impoundments are restricted to those areas which must be entered for the construction of temporary or permanent structures. Rivers, streams, wetlands, and impoundments shall be promptly cleared of all falsework, piling, debris or other obstructions placed therein or caused by the construction operations unless otherwise approved by the engineer.

Frequent fording of live streams or wetlands with construction equipment is not permitted. Temporary bridges or other structures shall be used wherever stream crossings are necessary. All temporary fills and structures placed in streams, wetlands, or impoundments will be removed and the site returned to natural or intended contours prior to completion of construction. Unless otherwise approved, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures. If a Section 404 permit is applicable for a project, its requirements and/or conditions shall be followed.

Site-specific BMPs above and beyond those identified within the contract plans or MoDOT standard specifications shall be discussed with the contractor at a preconstruction conference, if known, or as necessary to control erosion and minimize sediment loss throughout the life of the project. The use of alternate BMPs or methods may be acceptable, but approval of alternate practices will need to be approved by the engineer. Also, special conditions may be developed which can include limitations on the amount of surface area that can remain unprotected at one time or could include special water quality or stream protections requirements.

The location of all local material pits (other than commercially operated sources) and all excess material areas shall be subject to the approval of the engineer (material in this case refers to soil and rock). Construction operations shall be conducted and pollution control measures implemented so that erosion will not result in water pollution.

Portable concrete and asphalt plants located on MoDOT right of way can be covered under the MoDOT State Operating Permit. Any discharges from these operations must be managed by appropriate BMPs. The plant and BMPs must be depicted on the project site map within the permitted site and appropriately accounted for in the project SWPPP. Operators of portable plants that are located off of MoDOT right of way will be responsible for obtaining all appropriate permits directly from the DNR. The contractor is responsible for all costs associated with erosion and sediment control to protect plant locations, regardless if the plant is located on or off of MoDOT right of way or easements.

Borrow and excess (waste) disposal sites located on MoDOT right of way or owned by MoDOT can be covered by the MoDOT permit and SWPPP. For borrow and excess disposal activities not located on MoDOT right of way, the borrow or excess disposal operator will be responsible for obtaining all appropriate permits. (See Fig. 806.8.1 MoDOT/Contractor Responsibility for details about the permitting requirements.)

In the event of a conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations may apply.

806.8.6.2 Non-Structural Control Measures

Protection of existing vegetation is an important and sometimes overlooked component of erosion and sediment control. Preserving natural vegetation in certain areas during construction serves to slow the flow of water, protect against erosion and reduce sediment transport from sheet flow. Vegetated filter strips (i.e., buffers) located along the shoulder, within the median, in MoDOT ditches, or adjacent to a body of water or wetland, serve as excellent sediment capture devices. They can be particularly effective in areas where the density of grass and other herbaceous vegetation can filter the water. In most cases, vegetative buffers are used in concert with other BMPs; however, there may be situations where vegetative filter strips can suffice as independent features. Depending on site characteristics, these areas of undisturbed right-of-way can potentially provide the same benefit to water quality as would many types of structural controls, such as silt fences, ditch checks, and sediment traps or basins. If natural or created vegetated filter strips are used, they must be located within MoDOT right of way or easement and inspected and maintained like other BMPs. Vegetation on an adjacent property cannot be used as a MoDOT BMP. During project design, site conditions and stormwater runoff analysis will determine the selection of appropriate BMPs, which may include non-structural BMPs and vegetated buffers. If during inspections, BMPs, including vegetated buffers, are determined to be ineffective or insufficient at controlling erosion or sediment transport, additional BMPs will need to be installed to effectively manage the stormwater runoff.

Preserving natural vegetative filter strips is especially important when working in proximity to surface waters, which may include, but are not limited to, rivers, streams, lakes, ponds and wetlands. When working along or adjacent to these features, MoDOT is required by its statewide land disturbance permit with MDNR to retain a minimum of a 25-foot buffer of undisturbed natural vegetation between land disturbance operations and the body of water, unless site conditions and/or limitations make the use of such a buffer infeasible. To comply with this permit requirement, when working adjacent to these waters, MoDOT should determine on a case by case basis whether preserving an existing buffer is feasible, or whether contractor or maintenance operations will require complete use of the area to facilitate work activities. Preserving natural vegetative buffers must be considered for all MoDOT projects working in proximity to surface waters; however, factors like limited right-of-way, contractor/maintenance access, and the nature of work activity (e.g., bridge and culvert installation, maintenance and repairs) are often going to make MoDOT’s use of this BMP infeasible. In these cases, contractor/maintenance activities would make use of most or all areas of right-of-way or easement, which could include work up to the edge of, or even within waters of the state. If a vegetative buffer can be preserved, it must be incorporated as a non-structural BMP and denoted on plan sheets to remain undisturbed. If use of a buffer is determined to be infeasible or not effective at managing stormwater runoff, as previously mentioned, MoDOT will install other appropriate alternative BMPs to minimize the discharge of pollutants. The choice of an alternative BMP, or combination of BMPs, will depend on site variables, but could include the use of Type C Berms, sediment basins, sediment traps, ditch checks, perimeter silt fence (including mulch berms) and the effective use of temporary or permanent seed and mulch or erosion control blankets, all described within this SWPPP, to limit erosion and any subsequent sediment transport. All BMPs, including any vegetated filter strip(s), will need to be identified, inspected and managed within the project SWPPP.

Like other BMPs, vegetated buffers should be inspected for effectiveness and maintained accordingly. Sediment deposits within vegetated buffers may be left in place or removed post construction depending on MoDOT's future plans for the area and consideration of whether there is a potential to affect water quality in adjacent surface waters. Inspectors should also consider whether it would be more destructive to the buffer to retrieve sediment deposits than to leave them. If leaving sediment deposits within vegetated buffers, it may sometimes be necessary to seed and mulch over the area, depending on the amount of sediment deposited.

Other Non-Structural BMPs such as seeding, mulching, stabilized construction entrances, flocculants and other chemical additives are discussed elsewhere in this document.

806.8.6.3 Erosion Control Measures

The emphasis on MoDOT projects should be on erosion control, focusing on covering up exposed soil, preferably with permanent vegetation, rock, pavement, etc., as soon as practical in order to protect the soil surface and keep soil particles from dislodging and entering stormwater. Focusing on controlling stormwater velocity and volume is a critical element of erosion control. Best management practices (BMPs) shall be used to control stormwater volume and velocity, control stormwater discharges at outfalls, and minimize sediment loss from MoDOT right of way onto adjacent land or into streams, lakes, ponds, wetlands, drainage channels, etc.

The following described practices are commonly used erosion control BMPs that may be used individually or in combination with other practices, such as the sediment control devices discussed in EPG 806.8.6.4 Sediment Control Measures, to assure effective erosion control and minimize off site delivery of pollutants. Other practices that are not listed here or have not been identified or invented at the time of the preparation of this SWPPP, may be used if their performance is equivalent or better than the practices listed below.

806.8.6.3.1 Soil Surface Roughening

Surface roughening is a temporary erosion control BMP that will reduce runoff velocity and erosion potential by increasing infiltration and sediment trapping. This practice is intended for areas which have been cleared and grubbed and are awaiting application of temporary or permanent seed, or installation of other structural controls such as ditch checks, sediment traps, or sediment basins. The practice is NOT intended to serve as a stand-alone best management practice and is only to be used as a short-term, sequential practice as the grading and seeding proceeds.

Where backslopes are unlikely to be mowed or maintained due to steepness and lack of access, surface roughening can be a permanent measure. In these situations, seed and mulch may be applied directly to the roughened seed bed. This will aid in the establishment of vegetative cover and will minimize destructive compaction by heavy equipment. There are three common methods of surface roughening (tracking, grooving, stair stepping) that can be employed depending on the soil type, slope and potential maintenance concerns for the project.

A. Tracking involves the use of tracked construction equipment (dozer, high lift, etc.) vertically tracking up and down slopes in order to create horizontal depressions, perpendicular to the runoff path, on the soil surface. These depressions reduce stormwater velocity and the potential for concentrated runoff, which typically leads to rill formation. Tracking can lead to significant soil compaction, which does help lock soil particles in place; however, it is also undesirable for root production and grass growth. Due to this fact, care should be taken in deciding which slopes to track. Tracking is typically recommended for sandy soils, where risk of excessive compaction is reduced.

B. Grooving involves the creation of a series of ridges and depressions that run along the contour of a slope. The grooves can be created using a variety of implements such as a disks, harrows, chisel plows, loader teeth, etc. The grooves should be no more than 3 inches deep and no more than 15 in. apart.

C. Stair-stepping involves creating stair steps to reduce runoff velocity and encourage sedimentation on steeper slopes that will not be mowed. The stairs should be cut such that the vertical step does not exceed 1 foot. The horizontal step should be longer than the vertical step and sloped inward toward the vertical step face to promote sedimentation.

806.8.6.3.2 Mulching and Crimping

Application of mulch without seed may be used as a temporary best management practice if approved by the engineer. This temporary stabilization practice is most applicable in late fall or early winter when grass seed would have little or no opportunity to germinate. Straw mulch should be applied with a mulch blower, or by hand, and must be anchored (crimped or otherwise tackified) immediately after spreading to prevent windblow. Application rates will vary based on the percent slope. Bark mulch and/or wood chips do not require crimping. The engineer will determine whether or not the wood chip mulch may remain in place, be cultivated or be modified for permanent seeding.

806.8.6.3.3 Temporary Berms - Erosion Control

A temporary berm is a temporary ridge of compacted soil, with or without a shallow ditch, constructed at the top of slopes or transverse to centerline on fills. The purpose of these ridges is to divert storm runoff from small areas away from steep slopes and direct this water to temporary, stabilized outlets where the water can be discharged with minimum slope erosion. These ridges are used temporarily at the top of newly constructed slopes to prevent excessive erosion of the slopes until permanent controls are installed and/or the slopes are stabilized. They are also used transverse to grade to divert runoff to stabilized slope drains. Weekly (and post-runoff) inspections will be necessary to identify breeches in all temporary berms used as BMPs.

Type B Berms are constructed on the top of slopes and are intended to direct runoff water away from project slopes and toward stabilized drop down structures/pipes or stormwater detention areas, sediment capture devices, etc. These temporary diversion structures are specified when embankment operations are shut down over extended periods of time. Operation and maintenance concerns are limited to ensuring that the majority of runoff water is directed into the inlet of the slope drain. Removal of Type B Berms will normally occur when base rock is installed, prior to paving, but may be used longer if necessary.

806.8.6.3.4 Temporary Pipe Slope Drains

A temporary pipe slope drain (see Standard Plan 806.10 (https://www.modot.org/media/16839)) is used to carry water down slopes to reduce erosion and may consist of half-round pipe, metal pipe, plastic pipe, or flexible rubber pipe. These structures are installed after the slope has reached its intended elevation and final grade.

The inlet end will be properly constructed to channel water into the temporary drain. The outlet ends will usually have some means of dissipating the energy of the water to reduce erosion downstream and will have a sediment control BMP or a system of sediment control BMPs to capture sediment carried within the stormwater. Where scour at the outlet is of lesser concern due to the physical characteristics of the ditch, there shall still be sediment capture devices in the ditch or drainage outlet downgrade from the slope drain outlet. Unless otherwise specified, all temporary slope drains will be removed when no longer necessary due to the slopes being stabilized or the routing of runoff down permanent letdown structures. Upon removal of temporary slope drains, the site will be restored to match the surroundings.

806.8.6.3.5 Interception Ditches and Letdown Structures (Including Roadside & Median Ditches)

Interception ditches and letdown structures are typically permanent erosion control BMPs that capture stormwater run-on or runoff and transport it down slopes through stabilized channels. These constructed channels are meant to reduce the likelihood of gully formation and allow for the establishment of permanent vegetative cover on the face of the slope. Interception ditches and letdown structures are typically constructed in a “V”, “U”, or trapezoidal shape to concentrate water flow down the center of the structure in order to minimize the risk of break over points and flanking. They are typically lined with stone (riprap), erosion control blankets, turf reinforcement mats, or other product which is self-adjusting and capable of withstanding concentrated, erosive flows. In some instances, these ditches and letdowns may be

constructed as concrete or asphalt gutters; however, these types of rigid channel liners do not allow for water infiltration and often do not have built-in energy dissipation, which can exacerbate erosion at their outlets. In addition, due to their rigid nature, concrete and asphalt-lined drainage courses often undermine and experience section loss, which leads to system failure. There are alternative BMP technologies available (e.g. ShoreMax™, ScourStop™, Flexamat™, etc.) that give a degree of rigidity, if desired, to help armor the channel, or a portion of the channel more susceptible to erosion, while still allowing permeability for vegetative growth and water infiltration, as well as self-adjustment to prevent system failure.

Refer to EPG 806.8.6.2 Non-Structural Control Measures for the benefits of existing or reestablished vegetation within ditches, swales and other areas of right of way.

806.8.6.3.6 Temporary Pipes and Temporary Construction Crossings

A temporary pipe is a conduit used temporarily to carry water under a haul road, silt fence, etc. As additional erosion protection, temporary pipes can also be used to collect site run-on and covey it across disturbed areas on the job. Care should be taken to ensure the outlet of the temporary pipe is stabilized and adequate energy dissipation is available so as to not cause erosion of the receiving area.

Temporary pipes can also be used to convey normal and expected high flows at temporary stream crossings, preventing the contractor's equipment from coming into direct contact with the water when crossing active streams as discussed in EPG 806.8.6.1 Construction Requirements. Any temporary structures used to facilitate construction (e.g. temporary crossings, temporary work pads) will be constructed of clean rock fill that is of sufficient size to be non-erodible under normal stream flow and also easily recoverable upon project completion. Temporary stream crossings will be sufficiently piped to allow for continuous and relatively unimpounded stream flow. The pipes will be placed to match the existing stream grade, which will allow for unimpeded aquatic life passage through the project area. Upon project completion, any temporary structure(s), including pipes and other materials, shall be completely removed and the area will be restored and stabilized.

806.8.6.3.7 Energy Dissipaters

An energy dissipater is a physical structure that is intended to reduce the erosive energy that is typically encountered down grade from a pipe or culvert. As such, these BMPs are normally permanent. Erosive energy from intense flows may also be encountered in median ditches or road ditches. Energy dissipation may be accomplished by the installation of large boulders, wood pilings, engineered concrete structures or other means approved by the engineer, following construction of the ultimate drainage channel or device. Unlike ditch checks and sediment traps, energy dissipaters are NOT intended to impound water and sediment. Energy dissipaters must be constructed in a fashion such that the water that flows through, over or around the structure is equally distributed in the discharge channel and does not exacerbate or cause a resultant erosion problem.

806.8.6.3.8 Seeding and Mulching

806.8.6.3.8.1 Temporary Seeding and Mulching (MO Specifications Sec 802 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=12) and Sec 805 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=12))

Temporary seeding and mulching will be used to produce a quick ground cover of annual grasses to reduce erosion in disturbed areas that are expected to be either re-disturbed or permanently seeded at a later date. It should be used as necessary to prevent erosion and decrease reliance on costly maintenance of sediment control BMPs. For project planning purposes, it is important to understand that temporary vegetative cover will begin to lose its effectiveness within 6 to 12 months depending on site conditions.

Disturbed areas shall be seeded and mulched when and where necessary to eliminate erosion. In designated areas seeding and/or mulching shall begin no later than 7 days after earthwork operations have ceased and shall be completed within 14 days (7 days on slopes steeper than 3:1 or greater than 3% and longer than 150 Ft. in length), weather permitting. Most disturbed areas, with the exception of the road grade itself, shall be temporary stabilized during the fall to prevent erosion. If final grade has been achieved, this operation should consist of establishing permanent vegetation, not temporary.

806.8.6.3.8.2 Permanent Seeding and Mulching (MO Specifications Sec 805 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=12))

Permanent seeding and mulching following the temporary seeding will be performed. It is important to remember that temporary seeding and mulching can be used to cover up bare soil during times that are not conducive to applying permanent seeding. Then, when conditions are more suitable for permanent seeding, it can be applied over/through the temporary seeding stubble. In some cases, it may be necessary to mow the temporary seeding stubble and then apply permanent seeding.

Any revisions or deviations from contract seed mixtures and applications must be approved by the Roadside Section of MoDOT's Maintenance Division.

806.8.6.3.9 Fiber Reinforced Matrix (FRM)

Fiber Reinforced Matrix (FRM) is a hydraulically applied (spray-on) erosion control product that bonds to, and blankets bare soil. It is typically applied with a truck or trailer mounted sprayer or by walking the affected areas with a hose sprayer. According to manufacturers, FRMs lock in moisture and nutrients to promote seed germination. Since these products are applied through spray-on application, they can conform to the contours of a slope and therefore can be applied to rough seedbeds. These products can be applied to most soil types on a wide range of slope configurations and can be used in place of any of the erosion control blankets (ECBs) discussed in EPG 806.8.6.3.10 Erosion Control Blankets and Turf Reinforcement Mats, below. However, considerations must be given to soil type, slope and weight of the material when considering using an FRM. These products are only to be used as slope protection, and are not designed to withstand concentrated flows within ditches, drainages or streams.

806.8.6.3.10 Erosion Control Blankets and Turf Reinforcement Mats

Erosion control blankets (ECBs) and turf reinforcement mats (TRMs) are designed to protect and reinforce vegetation from erosive forces until it can become established, or in the case of TRMs, in perpetuity. ECBs and TRMs are typically manufactured with straw, wood fiber (excelsior), jute, coconut coir fiber and synthetic materials or combinations of these materials.

ECBs are typically used to prevent sheet, rill, or gully erosion on slopes and some lower flow channels. TRMs may be used on steep slopes or slope areas with concentrated flow but are typically used in channels. Since ECBs have a limited life expectancy (longevity) they are considered to be "temporary" erosion control measures; however, most TRMs are composed of interwoven layers of geosynthetic materials such as polypropylene, nylon and PVC netting, which protects

from both bio and photodegradation and allows for permanent vegetative reinforcement. At culvert outlets, overflow structures or transition areas, it may be necessary to use a transition mat (e.g., ScourStop™, ShoreMax™, etc.) directly over the TRM in order to add additional scour protection in these highly erosive areas.

806.8.6.4 Sediment Control Measures

As previously stated, the emphasis on MoDOT projects should be erosion control, focusing on covering up exposed soil, preferably with permanent vegetation, rock, pavement, etc., as soon as practicable in order to protect the soil surface and keep soil particles from dislodging and entering stormwater. While erosion control should be the primary focus, it is important to back up erosion control efforts with appropriate and effective sediment control. Sediment control is most effective when incorporating a system of structural BMPs (treatment train) and focusing efforts on combatting sediment as close to its source as possible.

Understanding soil types is important when designing and implementing sediment control BMPs. Sand and silt consist of larger particle sizes that will fall out of suspension in stormwater more readily than clays. Clay particles are very fine and tend to stay in suspension for significant periods of time. Traditional sediment control BMPs, such as silt fence and ditch checks, are most effective at removing sand and silt from suspension. Larger impounding BMPs, such as sediment basins and sediment traps, are also effective at removing sand and silt, but can be effective at removing clay, due to prolonged impoundment. Even these impoundments may not successfully remove clay particles from suspension. In these situations, it may be necessary to include flocculants within a BMP system to remove excessive clay from stormwater prior to discharge from the project site. Flocculants are discussed in more detail in EPG 806.8.13 Turbidity Reduction and Advanced Treatment Systems.

The following sediment control measures should be used in combination with erosion control practices to control sediment movement and prevent or minimize the discharge of pollutants from MoDOT projects.

806.8.6.4.1 Sediment Basin

A sediment basin is a large sediment capturing device that can be constructed through excavation, or by constructing a dam across a low drainage swale to trap and store water and sediment that may not be caught by upgrade erosion and sediment control measures. Sediment basins can be temporary or permanent. Both permanent and temporary basins should be constructed with defined side slopes and rock riprap placed in inlet and outlet areas. (Refer to Standard Plan 806.10 (https://www.modot.org/media/16839).)

The location of sediment basins will be shown on the plans. Sediment basins should be designed to a sufficient size to contain a volume of at least a local 2-year, 24-hour storm. Where the use of a sediment basin of sufficient size as described above is impractical similarly effective BMPs or BMP systems will be incorporated, such as sediment traps, ditch checks, type C berms, etc., and the use of appropriate erosion control items to cover up exposed soil. An explanation for selecting these similarly effective BMPs instead of a basin will be documented in the project SWPPP.

Maintenance (sediment removal) will be conducted before the basin is 50 percent full. Accumulated sediment removed from sediment basins shall be disposed of in locations where it will not erode into construction areas or waters of the state.

806.8.6.4.2 Sediment Trap

A sediment trap is a temporary sediment collection structure that is used for sediment control purposes. If properly maintained, the life expectancy of these structures can be approximately 2 years. (See Standard Plan 806.10 (https://www.modot.org/media/16839).)

The location of sediment traps will be shown on the site plans. Accumulated sediment shall be removed from the trap when sediment has accumulated to 1/2 the height of the structure, or if an excavated pit, 1/2 of the original depth. Accumulated sediment removed from the sediment traps shall be disposed of in locations where sediment will not erode into construction areas or waters of the state. Discharges from the sediment trap shall not cause scouring of the receiving area or banks or bottom of the receiving stream.

806.8.6.4.3 Ditch Checks

Ditch checks are also considered as erosion control measures.

MoDOT has two categories of ditch checks: rock and alternate ditch checks. Ditch checks should be installed as soon as practical to minimize erosion and control sedimentation. Initial placement of ditch checks, prior to final ditch grade, should focus on stormwater runoff control and drainage structure protection. Once ditch grading operations have achieved final grade, controls shall be installed as directed by the engineer.

Rock Ditch Checks are the predominant ditch check to be used on MoDOT projects. Rock ditch checks can be specified in most drainage areas where ditch slopes are 10 percent or less, and where expected ditch flow volumes and velocities are high. For scenarios that exceed the criteria established above, a combination of rock ditch checks and erosion control blankets (ECBs) or turf reinforcement mats (TRMs) should be used. *(Note: ECBs or TRMs may be designed into and used in any ditch or drainage regardless of the criteria outlined in this article.)*

Rock ditch checks will typically be constructed of rock with a predominant size between 4 in. and 12 in., but this size may be adjusted to incorporate larger sizes if site conditions warrant. They will have a minimum effective height of 18 in. as measured in the field (see Standard Plan 806.10 (https://www.modot.org/media/16839)). In areas of clay soils, where additional filtration may be needed, the upgrade face of the check can be capped with smaller stone, filter fabric or another approved filtering media. In some cases, it may also be necessary to place a section of ECB or geotextile beneath the rock ditch check and extending downgrade of the structure to prevent the rock from settling into the soil beneath and/or protect from downstream scour within the ditch line.

Alternate Ditch Checks should be considered as an alternate to rock ditch checks in areas where there are safety concerns for the traveling public or other constraints where there would be concern with installing rock. These devices can typically be used in smaller drainage areas (generally 3 acres or less), with ditch slopes of 4 percent or less, and where expected ditch flow volumes and velocities are small (see Standard Plan 806.10 (https://www.modot.org/media/16839)). These thresholds may be exceeded at the approval of the engineer.

Alternate ditch checks should have an effective height of at least 9 in. as measured in the field and should be installed in accordance with the manufacturer's recommendations or as outlined in this SWPPP.

Alternate Ditch Checks can include the following or other engineer approved devices:

Triangular Silt Dike®
EnviroBerm® Porous Sediment Control System (In combo with ECB or TRM)
GeoRidge/GeoRidge Biodegradable (Nilex) (In combo with ECB or TRM)
Compost Filter Berms (1'(H) x 2'(W)) (Covered with biodegradable ECB/TRM)
Sand Bags
Fiber Rolls, Sediment Logs, Compost Filter Socks – staked and > 9" effective height and must be used in combination with ECBs or TRMs as a channel liner beneath, unless used in a ditch with sufficient existing vegetative cover to prevent erosion.

(Important: Straw wattles, straw bales and geotextile silt fence are not acceptable as a ditch check BMP.)

Each type of ditch check (particularly the tubular/cylindrical/triangular products) will have specific directions for installation. In all cases care shall be exercised to install the device according to manufacturer specifications. Effectiveness may be compromised if not installed correctly.

Ditch checks shall be placed and constructed according to Standard Plan 806.10 which shows the spacing for ditch checks. The estimate of the required number of ditch checks is based on an effective height of 9 in. or 18 inches. In some cases, local conditions may dictate some deviation from the dimensions and shape that are shown in the Standard Plans; however, deviations from Standard Plans must still ensure that sediment capture and erosion control is occurring.

Ditch checks shall remain in place until the engineer directs that they be removed once adequate stabilization (vegetative cover, rock, concrete, etc.) upgrade of the structures has been achieved in accordance with the permit. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish stabilization on all bare areas.

Maintenance (sediment removal) will be conducted on a ditch check before the check is 50 percent full.

806.8.6.4.4 Silt Fence (MO Specifications Sec 624 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=9) and 1011 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=14))

Use of a silt fence consists of furnishing, installing, maintaining, and removing a geotextile barrier fence designed to remove suspended particles from water passing through the fence. Silt fence is a temporary sediment control measure to control sheet flow along the edge of the right of way where runoff attempts to leave the project onto an adjacent property or into an adjacent body of water or wetland. Silt fence must never be used in concentrated flow to cross a ditch, stream or drainage channel, and in no case installed downgrade from a pipe or culvert.

As a general rule, geotextile silt fence, especially non-wire reinforced geotextile silt fence, should not be used as inlet protection, particularly around culvert and drop inlets where high volume, concentrated flows are expected, except in the instance described in EPG 806.8.6.4.6 Inlet Controls.

Post spacing shall not exceed 5 ft. for geotextile silt fence installations. Posts shall be driven a minimum of 24 in. into the ground. Where rock is encountered, posts shall be installed in a manner approved by the engineer, or an alternative BMP may be selected. Closer spacing, greater embedment depth and/or wider posts shall be used as necessary in low areas and soft or swampy ground to ensure adequate resistance to applied loads. In low swales, where concentrated flows may form, consider using a ditch check or sediment trap in lieu of silt fence. If heavy sediment or runoff loading is expected against the silt fence, the use of metal “T” posts should be considered in lieu of wooden post stakes.

When silt fence is used as a perimeter sediment control device it will generally be installed at the time of clearing and grubbing, and must be maintained for as long as necessary to contain sediment from runoff.

Sediment deposits shall be removed and disposed of when the deposit approaches 1/2 the height of the fence or sooner. If required by heavy sediment loading, a second silt fence shall be installed as directed by the engineer.

The silt fence shall remain in place until areas that drain to the fencing are stabilized in accordance with the permit and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas.

Biodegradable silt fence (such as some of the example products listed below) need not be removed unless directed by the engineer.

At the discretion of the engineer the following product examples or other approved BMPs, such as mulch berms, may be substituted for perimeter geotextile silt fence. These devices should be installed in accordance with manufacturer recommendations. In the case of the wattles, socks and log devices, if practical and possible, a cradle trench should be created to lay the product in to ensure proper contact with the ground surface. This may not be appropriate if installing these devices in areas with existing grass cover, such as yards, or in areas with shallow utilities or bedrock beneath. Even so, care should be taken to ensure flush contact with the ground surface. Thought should also be put into product choice based on expected longevity, as some devices listed below will decompose or break down more quickly than others, and may require replacement or multiple replacements during the life of a job. In general, perimeter silt fence installations should have a minimum 9" in effective height, as measured in the field, unless site conditions warrant a higher or lower effective height.

Example Products:

Sediment STOP
Terra-Tubes
Sediment Logs, Wattles
Compost Filter Socks/Berms
Triangular Silt Dike

806.8.6.4.5 Rock/Mesh Sediment Control Fence and Inlet Protection Device

In situations when higher velocity stormwater flows are expected around the perimeter of a construction site, a rock/mesh sediment control fence should be installed in lieu of geotextile or other silt fence applications. This device is constructed using a 4 ft. wire mesh (hardware cloth – 24 gauge, ¼ in. openings) folded in half to form a 90° angle. This mesh is then wired to, and supported by 5 ft. metal "T" posts spaced 3 ft. apart and driven approximately 2 ft. into the ground. Lastly, a layer of grade 4 or grade 5 aggregate for drainage (Sec 1009 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=14)) is placed against the mesh, with a minimum height of 12 in., but preferably 18 inches. (Refer to Standard Plan 806.10 (https://www.modot.org/media/16839).)

This same device can be modified for use around drop inlets, creating a closed ring or box around the inlet opening using the same installation guidelines outlined above.

The rock/mesh sediment control fence shall remain in place until areas that drain to the fencing are stabilized and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess sediment accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas.

806.8.6.4.6 Inlet Controls

Storm drain (culvert, drop or curb) inlet protection measures prevent soil and debris from entering storm drain inlets. Temporary inlet protection is implemented at existing inlets prior to land disturbance, and new inlets are to be protected as they are put into service. Effective storm drain inlet protection must be provided throughout the project for all inlets susceptible to receiving sediment until all sources with potential for discharging to an inlet have been stabilized. At that time inlet controls can be removed.

The following types of items are generally considered for use as inlet protection:

Curb Inlet Protection:

- Sand Bags/Rock Socks
- Wattles/Compost Filter Socks/Fiber Rolls/Sediment Logs, etc.
- Various Filter Devices and Inserts (e.g., but not limited to, FLEXSTORM Inlet Filters, Silt Saver Inlet Filter, Big Red Curb Inlet Protector and Dandy Products)
- Wood, Steel or Other Barricades

Drop or Pipe/Box Inlet Protection (Shall have a minimum 9 in. effective height):

- Rock/Mesh Inlet Check (NEW – see EPG 806.8.6.4.5 Rock/Mesh Sediment Control Fence and Inlet Protection Device)
- Rock Ditch Checks
- Triangular Silt Dike®
- Sand Bags
- Various Filter Devices (e.g., but not limited to, Silt Saver Inlet Filter, Big Red Area Inlet Protector and Dandy Products)
- Wood (CBST, as discussed in EPG 806.8.6.4.2 Sediment Trap), Steel or Other Barricades

(Note: Item selection may vary depending on the type and design of inlet to be protected and careful consideration should be made with inlet protection to ensure any impounded water will not flood streets, buildings, homes, etc..)

As a general rule, geotextile silt fence, especially non-reinforced geotextile silt fence, should not be used as inlet protection, particularly around culvert and drop inlets where high volume, concentrated flows are expected. An exception to this is if a constructed wood or steel frame is erected around the inlet and this frame is then wrapped with geotextile material. In this application, it is recommended for additional support and protection that wire reinforcement be wrapped around the frame and then the geotextile applied over the wire.

Each type of inlet control device (particularly the tubular/cylindrical/triangular products) will have specific directions for installation. In all cases care shall be exercised so as to install the device according to Standard Plan 806.10 (https://www.modot.org/media/16839) or the manufacturer's specifications. Effectiveness may be compromised if not installed correctly.

During construction, elevated curb inlets and median inlets, as well as excavations around inlets, may serve as "riser pipes" as long as they are sufficiently higher (approximately 9 in. or more) than the existing grade. Sediment that accumulates at the base of the riser pipe following stormwater events shall be removed when it reaches 1/2 of the original height of the riser pipe. Once the desired grade has been achieved and the inlet becomes flush to that grade, subsequent inlet protection is required.

806.8.6.4.7 Temporary Berms — Sediment Control

Type C berms are specified at the toes of spill slopes around bridge construction operations and will usually be constructed to the specified dimension (see Standard Plan 806.10 (https://www.modot.org/media/16839)). However, dimensions may deviate from those shown on the standard drawings based on site limitations. A straw layer, erosion control blanket, or geotextile is typically required on the upgrade side of the Type C berm to improve stormwater filtration. This additional filtration layer may be removed if the character of the rock material is sufficient to minimize sediment loss from the project. In certain construction operations, Type C berms may be used as perimeter protection where significant stormwater flows and/or sediment loading is expected, which would overwhelm silt fence applications. Installation will generally precede land disturbance activities, unless some clearing is necessary in order to gain access to the site. Type C

berms are typically temporary, but may be permanent depending on the ultimate desired use of the right of way beneath the bridge. If the Type C Berm is removed, material may be used for bank stabilization, or other construction use. Bank stabilization will be in accordance with the Section 404 permit.

806.8.6.4.8 Compost Filter Devices

Two categories of compost filter devices are used as erosion and sediment control BMPs on MoDOT projects: compost filter socks/ logs and compost filter berms. *(Note: Compost can also be used as a soil amendment and sometimes as a mulch to enhance vegetative establishment.)*

Compost Filter Socks consist of compost filter media (compost, or non-treated wood) encased within a three-dimensional fabric tube for purposes of erosion, sediment and pollution control. Compost filter socks are typically used for perimeter protection and are an acceptable alternative to geotextile and other silt fence applications described in EPG 806.8.6.4.4 Silt Fence. Compost filter socks are also acceptable alternate ditch checks as described in EPG 806.8.6.4.3 Ditch Checks. Specified effective height, as measured in the field, shall apply for both silt fence and ditch check applications. Compost filter socks shall be installed according to the manufacturer's specifications or Standard Plan 806.10 (https://www.modot.org/media/16839), including ground preparation and staking requirements. Though compost filter socks are commonly used for perimeter protection and alternate ditch checks, other uses may include: curb and drain inlet protection; slope interruption; protection along the toe of stream and channel banks; on compacted and frozen soils, or pavement where trenching is difficult or impossible; and around sensitive resources where trenching may disturb the resource.

Sediment shall be removed once it has accumulated to one-half the original height of the sock. Compost filter sock shall be replaced whenever it has deteriorated to such an extent that the effectiveness of sock is reduced. Compost filter socks shall remain in place until disturbed areas draining to the devices have been permanently stabilized in accordance with the permit. Upon removal of compost filter socks, the wooden stakes should be pulled and the biodegradable netting cut to encourage more rapid degradation. If the netting is non-biodegradable, the netting shall be cut and removed along with the stakes, but the compost filling may be left to further decompose and act as a soil amendment.

Compost or non-treated wood used for compost filter sock filter media (filler material) shall be weed, disease, and pathogen free and derived from a clean source of woody organic matter. Compost shall be produced using an aerobic composting process meeting CFR 503 regulations including time and temperature data. The filler material shall be free of any refuse, contaminants or other materials toxic to plant growth. Test methods for the items below should follow U.S. Composting Council Test Methods for the Examination of Composting and Compost guidelines for laboratory procedures:

- pH – 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost"
- Particle size – 99% passing a 2 in. (50mm) sieve and a maximum of 40% passing a 3/8 in. (9.5mm) sieve, in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification". *(Note- In the field, product commonly is between ½ in. [12.5mm] and 2 in. [50mm] particle size.)*
- Moisture content of less than 60% in accordance with standardized test methods for moisture determination.
- Bulk density shall be a minimum of 14 lbs/cu ft (dry weight)
- Material shall be relatively free (<1% by dry weight) of inert or foreign man-made materials.
- The engineer may request a sample for approval prior to being used and must comply with all local, state and federal regulations.

Compost Filter Sock Fabric Specifications				
Material Type	**5 mil HDPE**	**5 mil HDPE**	**Multi-Filament Polypropylene (MFPP)**	**Heavy Duty Multi-Filament Polypropylene (HDMFPP)**
Material Characteristics	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	8”	8”	8”	8”
	12”	12”	12”	12”
	18”	18”	18”	18”
	24”	24”	24”	24”
	32”	32”	32”	32”
Mesh Opening	1/8” - 3/8”	1/8” - 3/8”	1/8” - 3/8”	1/8” - 3/8”
Tensile Strength	26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	-	100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	9 months	6 months	1 year	2 years
Note: All materials must be knitted. Extruded materials not permitted.				

Compost Filter Berms are temporary barriers of compost placed along the perimeter of a site, or at intervals along a slope, to control erosion and capture sediment from sheet flow. A filter berm can also be used as a check dam in small drainage ditches as described in EPG 806.8.6.4.3 Ditch Checks. Loose applied compost berms (i.e., mounded compost) should be anchored in place (covered) with ECB for stability. To anchor the compost effectively, place the ECB first and then install the compost along and atop the downgrade edge of the ECB and wrap the ECB over the compost in the direction of flow and anchor with staples or an equivalent.

Composts used in filter berms are made from a variety of feedstocks, including municipal yard trimmings, food residuals, separated municipal solid waste, biosolids, wood chips and manure.

Compost filter berms can be used in place of traditional sediment and erosion control tools such as geotextile silt fence. As such these berms can be installed at the time of clearing and grubbing, or as needed throughout the construction process, and will remain in place until the site is stabilized. Sediment shall be removed once it has accumulated to one-half the original height of the berm.

Post-construction removal is not required because the compost and ECB are biodegradable. However, unvegetated berms are often broken down once construction is complete and the compost is sometimes spread around the site as a soil amendment or mulch.

806.8.6.4.9 Mulch Berms

The use of shredded or chipped mulch for berms or temporary groundcover is an acceptable reuse of cleared trees and brush from MoDOT projects. Mulch berms are used for perimeter protection and are an acceptable alternative to geotextile and other silt fence applications described in EPG 806.8.6.4.4 Silt Fence. As such, these devices are used to filter sheet flow and are not appropriate in ditches, drainage channels or other areas of concentrated flow.

Mulch berms are most effective when piled to a height of at least two feet, preferably installed in existing vegetation, outside of, or at the edge of project clearing limits, so that a buffer of undisturbed soil and vegetation remains on both sides of the berm. Mulch berms will generally be installed at the time of clearing and grubbing, and must be maintained for as long as necessary to contain sediment from runoff. Mulch berms should be installed on the contour when possible to prevent overtopping or overloading at single points.

Where deficiencies are identified as a result of stormwater inspections, additional mulch, or another appropriate BMP shall be installed as approved or directed by the engineer.

Sediment deposits shall be removed and disposed of when the deposit approaches 1/2 the height of the berm or sooner. A mulch berm shall remain in place until areas that drain to the structure are stabilized in accordance with the permit and the engineer directs that it be removed. Upon removal, the contractor shall remove and dispose of any excess silt accumulations, grade and dress the area to the satisfaction of the engineer, and establish vegetation on all bare areas.

Mulch is biodegradable and need not be removed, unless directed by the engineer. Though not required to be removed, piled mulch should be knocked down and dispersed into a thin layer of ground cover, which will aide in the breakdown of the material.

806.8.6.4.10 Brush Pile Checks/Barriers

Brush pile checks or barriers are considered be temporary BMPs that can be effective during clearing and grubbing operations. Piled and compressed tree tops, limbs, stumps and other vegetation, when placed in a **non-jurisdictional** drainage swale or around the perimeter of a land disturbance site, can effectively impound gravel, soil and other eroded materials. Brush pile checks are not appropriate for use in jurisdictional (Section 404 of the Clean Water Act) bodies of water.

To be effective, brush piles should be compressed tight to the ground by clearing equipment at the time of installation so there is no void beneath. Brush checks and barriers are only intended to operate as stand-alone BMPs for a very short time period during initial clearing and grubbing, and should be bolstered by the installation of additional supportive measures upgrade or downgrade of the structures, such as sediment basins, sediment traps, ditch checks, etc., as soon as practicable. When these other devices are installed, the brush check/barrier may be left in place as additional filtration, if permissible, or removed.

806.8.6.4.11 Straw Bales (MO Specifications Sec 802) (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=12)

Bales of straw are no longer acceptable sediment control BMPs on MoDOT projects and will not be used as such. Straw is acceptable as mulch when applying temporary ground cover or establishing permanent vegetative cover. Straw used as ground cover is required to be embedded or tackified per Section 802 of the Missouri Standard Specification for Highway Construction.

Straw bales are an acceptable practice used to control concrete diamond grinding residue that is discharged onto MoDOT right of way due solely to the short duration of the discharge as described in EPG 806.8.11 Diamond Grinding and Other Surface Treatments. During concrete diamond grinding operations, the straw bales are typically used in concert with other BMPs, including non-structural BMPs such as existing vegetation.

In these situations, bales of straw can be installed as ditch checks and used as a temporary means of controlling pollution by obstructing the flow of the slurry and allowing deposition of the fine cement particles. The bales should be properly staked and extend far enough up the inslope and backslope to sufficiently impound the discharge slurry. The integrity of

straw bales must be maintained for as long as they are necessary to contain the slurry. When no longer necessary to control pollution, the bales and other temporary BMPs associated with diamond grinding operations should be removed.

806.8.7 Disturbed Areas

Project plans that are discussed in EPG 806.8.2 Site Description and EPG 806.8.3 Developing/Amending Project-Specific Project Plans will identify those areas that will be cleared and graded as part of the highway development project. The plans will also identify areas that are not to be disturbed. Both disturbance and do not disturb areas are generally staked in the field.

On areas of the site where soil disturbing activities will cease and are not planned to resume for a period exceeding 14 calendar days, interim stabilization must be initiated no later than 7 calendar days upon knowing of the 14-day cessation, and must be completed within 14 calendar days of the ceased operation. On portions of the project where slopes are greater than 3:1 (1V:3H), or greater than 3% and longer than 150 ft., all interim stabilization must be completed within 7 days of ceasing operations. Interim stabilization may include, but is not limited to the installation of sediment basins, sediment traps, ditch checks, sediment fences, and mulch; however, the preferred method of stabilization is seed and mulch.

All disturbed areas should be seeded and mulched or otherwise stabilized when and where necessary to eliminate erosion. Seeding and/or mulching shall be done as soon as possible after completion of the earthwork and preparation of the seedbed, weather permitting.

Whenever clearing, grading, excavating or other earth disturbing activities have permanently ceased on a portion of the site, final stabilization must be initiated no later than 7 calendar days after ceasing operations and must be completed within 14 calendar days of the ceased grading of the site or portion of the site. Final stabilization can be achieved by covering disturbed areas with pavement, buildings or other structures, perennial vegetation or non-erodible materials such as adequately sized rock placed in its final configuration. With respect to areas that have been seeded, vegetation cover must be at least 70% perennial plant density with uniform coverage over 100% of the disturbed area.

For the purposes of this section, allowances to the 14-day completion period for temporary and permanent stabilization may be made due to inclement weather or adverse site conditions. If used, these allowances must be properly documented in the project SWPPP and shall include pictures.

The following types of activities will constitute initiation of stabilization (this list is not exhaustive):

- Prepping the soil for vegetative or non-vegetative stabilization
- Applying mulch or other non-vegetative product to the exposed area
- Seeding or planting the exposed area
- Starting any of the above activities on a portion of the area to be stabilized, but not on the entire area
- Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization

806.8.8 Installation and Removal

The contractor shall be required to incorporate all permanent erosion control measures into the project at the earliest practicable time. As stated in EPG 806.8.6.1 Construction Requirements, when practical, border, perimeter or outfall BMPs to control runoff from disturbed areas shall be installed or marked for preservation before general site clearing. A limited amount of clearing may be permissible to enable the installation of outfall and perimeter controls. Stormwater discharges from disturbed areas, which leave the site, shall pass through an appropriate impediment prior to leaving the

site. It may be necessary to install additional control measures during construction which were not foreseen during the design stage. Temporary controls shall also be used when needed prior to installation of permanent erosion control measures to control erosion that develops during normal construction practices.

Temporary BMPs should be removed from the project when areas they are protecting have achieved final stabilization in accordance with the permit. Oftentimes engineers and/or contractors may desire to leave all temporary BMPs in place until project completion and then have one mass removal. Though this practice is not ideal due to increased vulnerability, it is acceptable if the BMPs are continuously inspected and maintained in accordance with the permit until their removal. Also, if the engineer determines that some BMPs shall remain in place for a period of time after the job is closed out; arrangements will be made to remove BMPs with MoDOT forces once they are no longer necessary.

806.8.9 Dewatering

Dewatering of ponds, lakes, coffer dams, pits or excavations associated with construction shall be discussed at the preconstruction conference, and articulated in a written plan, which will outline a method for properly treating the water before it can re-enter a river, stream, pond, lake, wetland, etc. This plan may be amended at any time if changes are necessary.

Sec 107.10.2 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=4) requires a dike or appropriate barrier to be placed between the excavation and the stream to prevent sediment from reaching the watercourse. The structural BMPs that are identified in EPG 806.8.6.4 Sediment Control Measures are usually sufficient to remove sediment and similar pollutants prior to discharge of return water. Land application of the discharge water is a viable option when percolation into the subsurface results; however, caution shall be used to ensure that water discharge does not cause the formation of gullies in cases where pumping exceeds percolation.

Discharges from dewatering activities shall be managed by appropriate controls suitable for treating water pumped from trenches and excavations. These appropriate controls shall be detailed in the SWPPP, including specific BMPs that will be used to treat the discharge. In no case shall water be pumped off site without being treated by the specified BMP unless approved by the engineer.

Untreated discharges must be specified as an allowable option through a project specific individual permit, typically on projects where structural foundations in large rivers, such as the Missouri or Mississippi, will be constructed

806.8.10 Roadways

In order to ensure that sediment is not transported into a situation where it can be delivered off-site, stabilized construction entrances should be used when construction equipment is frequently crossing or entering paved roadways. Stabilized construction entrances are typically built with rock of sufficient size to cause mud and dirt to fall off of the tires of the construction equipment. Geotextile fabric may be necessary for placement below the stabilized entrance in some soil conditions to prevent the rock from subsiding into the soil. In muddy situations, the voids between the rocks will always fill up with soil particles and as such, additional stone will need to be applied periodically and when repair is required.

The purpose of the stabilized entrance is to reduce the amount of sediment that will be transported onto the driving surface. However, the driving surface at the point of the active crossing cannot remain clean without additional measures such as sweeping or grading.

Because it is impossible to eliminate all trackout of sediment, inspections should ensure that sediment control measures downgrade from the area of trackout are in good operating condition, especially inlet controls.

On projects where there is one primary construction entrance/exit and a large volume of equipment is expected to pass through this point, a more structural BMP may be appropriate to handle the volume of sediment. If this is the case, rumble strips, cattle guards, or wheel wash stations may be employed to effectively remove sediment. In these situations, routine maintenance will be needed to remove accumulated sediment from beneath and/or around these structures. If a wheel wash system is used, wash water should be channeled to a constructed sediment trap for treatment, unless the system has the capability to recycle the wash water. Just as with other sediment traps, once installed, the location of the trap will be shown on the inspector's site plans. Accumulated sediment shall be removed from the trap when the accumulation reaches 1/2 the height of the structure, or if an excavated pit is used, 1/2 of the original depth.

When accumulated sediment is removed from these BMPs, the material shall be disposed of in locations where sediment will not erode into the construction areas or waters of the state.

806.8.11 Diamond Grinding and Other Surface Treatments

Although diamond grinding, grooving, and other pavement surface and bridge deck treatments are not land disturbance activities, the fine material that is removed from the driving surface will become suspended in discharge water and has the potential to contaminate nearby streams if not sufficiently managed. The following shall be considered the minimum requirements for performing this work within the project limits in addition to Sec 622 (http://www.modot.org/business/standards_and_specs/SpecbookEPG.pdf#page=9) and EPG 622.2.1 Construction Inspection for Diamond Grinding of Existing Portland Cement Concrete Pavement.

The contractor shall submit to the engineer for approval in writing prior to the pre-construction conference, the best management practices (BMPs) to be used to protect the environment, including the method of disposal whether on right of way or off-site. Dispersal of diamond grinding residue on the right of way, where allowed, is the contractor's choice versus tanking and disposal. Therefore, all BMPs necessary for protection of drainage outlets will be incidental to the diamond grinding operation. See EPG 806.8.6.4.11 Straw Bales for more information about using straw bales as BMPs.

When concrete slurry is dispersed on the right of way, BMPs shall be installed to keep slurry residue from entering drainage structures, waters of the state, and from leaving the right of way. At no time should asphalt diamond grinding slurry be discharged directly onto MoDOT right of way. Asphalt grinding residue must be tanked and disposed of properly.

Prior to starting work, concrete slurry or residue “no discharge zones” will be identified by the engineer with respect to the contractor’s approved BMP and residue disposal plan. Special provisions and restrictions will apply when operating in proximity to streams, wetlands, sensitive species habitat and in karst (landscapes with caves) and groundwater recharge areas.

The engineer may suspend operations during periods of rainfall or during freezing temperatures.

806.8.12 Concrete Washout

Concrete washout BMPs are to be established in designated areas for all projects where concrete production or delivery is occurring. These washouts are used to contain residual concrete, concrete associated liquids and the wash water from cleaning trucks, hoppers and chutes, which typically have a high pH, heavy metals, and could contain other chemical additives. Washout BMPs can be non-leaking plastic or clay/bentonite lined pits, a straw bale enclosure lined with plastic, a storage tank or prefabricated BMP or other structure approved by the engineer. In karst regions of the state, such as the Ozarks, extra care should be taken to ensure proper lining of earthen pits, as cracks and fissures within the bedrock could

allow for direct pollution of ground water. Designated washout areas should be located at least 50 feet away from storm drains, ditches, streams or other water bodies. Washouts should be cleaned out when they reach 75% of their design capacity. Care should be taken to ensure these structures do not overflow during storm events.

Washout liquids can be allowed to evaporate or be pumped out and properly disposed of. They cannot be discharged into storm drains, ditches, streams or other bodies of water. Dried concrete can be broken up and used as clean fill on the project, recycled or properly disposed of by other means.

806.8.13 Turbidity Reduction and Advanced Treatment Systems

Water clarification and the removal of turbidity will usually require the addition of flocculants, polymers, polyacrylamides (PAM), chitosan and other chemicals that cause soil particles to bind together, become heavy and settle to the bottom of a sediment trap or sediment basin.

Since settling of flocculated soil particles requires very slow moving (still) water, natual and chemical additives should never be introduced into an outfall BMP where water leaves MODOT right of way. In all cases where flocculants are used to reduce turbidity it is essential to include a sediment basin or sediment trap and a ditch liner or ditch check apron that prohibits additional erosion on the downgrade side of the ditch check.

The following Advanced Treatment Systems are options for use in MODOT projects where turbidity removal is required:

- Flocculant logs and flocculant flats that are installed directly in a ditch, pipe or culvert upgrade from a sediment basin or sediment trap.
- Flocculant treated ditch checks (i.e. fiber rolls, or compost socks/logs) that have been installed upgrade from a sediment basin or sediment trap.
- Flocculant treated rock ditch checks installed upgrade from a sediment basin or sediment trap.
- Geo ridge ditch checks with attached flocculant bags, installed upgrade from a sediment basin or sediment trap.
- Addition of granular flocculants directly into a ditch, upgrade from a sediment basin or sediment trap.
- Erosion control blankets and turf reinforcement mats that have been inoculated with flocculants, and installed upgrade from a sediment basin or sediment trap.

Chemical Stabilizers

Chemical stabilizers, also known as soil binders or soil palliatives, provide temporary soil stabilization. Various products are sprayed onto the surface of exposed soils to hold the soil in place and minimize erosion from runoff and wind. These materials are easily applied to the surface of the soil, can stabilize areas where vegetation cannot be established, and provide immediate protection.

Use chemical stabilizers alone in areas where other methods of stabilization are not effective because of environmental constraints, or use them in combination with vegetative or perimeter practices to enhance erosion and sediment control.

Closely follow the manufacturer's recommended application procedures to prevent the products from pooling and creating impervious areas where stormwater cannot infiltrate.

APPENDIX I – EPG 748.1.2 Hydraulic Impacts to Roadway

748.1 Evaluation of Project Impacts

Contents

748.1.1 Evaluation of Risk

The design of all hydraulic structures should include an evaluation of the potential for hydrologic and hydraulic impacts to the roadway and surrounding properties. The evaluation of risk is a two-stage process:

748.1.1.1 Risk Assessment

The initial step, identified as risk assessment, is a qualitative analysis of the potential risk involved with the drainage structure. This evaluation should include particular attention to the following risks:

- lack of a practicable detour
- hazard to people
- hazard to surrounding property

748.1.1.2 Risk Analysis

If the evaluation of potential hydrologic or hydraulic impacts indicates a potential exists for "unreasonable" damage to occur, a risk analysis should be performed. The risk analysis will consider damage to the roadway structures and embankments, damage to surrounding properties and traffic related losses, and will determine an appropriate balance between increasing the cost of the project and decreasing the risk of hydraulic impacts. Procedures for conducting a risk analysis are included in the FHWA HEC-17 publication Design of Encroachments on Floodplains Using Risk Analysis. Contact GHQ Design for additional guidance in performing a risk analysis. The evaluation of potential hydrologic and hydraulic impacts, as well as the risk analysis, if one is performed, shall be retained with the project file.

748.1.2 Hydrologic Impacts of Roadway

Development such as a highway project can affect the hydrologic characteristics of a watershed. Such development typically increases the amount of impervious area within the watershed, and may also decrease the time of concentration of the watershed. Both of these effects tend to increase both the volume and peak rate of runoff from the watershed. The magnitude of this increase is generally dependent on the ratio of the developed area (pavement and right of way in the case of highway projects) to the total watershed drainage area. When the developed area is a large percentage of the total drainage area, the impacts can be significant. The degree of hydrologic impact shall be subjectively evaluated for all highway projects; when the impacts are estimated to be of concern, a detailed analysis shall be performed. Significant increases in peak flow rates shall be mitigated through the use of detention storage or other appropriate measures.

748.1.3 Hydraulic Impacts of Bridges and Drainage Structures

For each drainage structure, an evaluation should be performed to compare the general hydraulic conditions of the area before and after the proposed improvement is made. This evaluation should consider increases in peak flow rates, flow velocities and water surface elevations as well as changes in drainage patterns before and after the proposed improvement is made. With the results of this evaluation, a determination can be made concerning the flood damage potential to adjacent properties as a result of the proposed improvement.

Evaluation of the consequences of risk associated with a stream crossing considers capital cost, traffic service, environmental and property impacts and hazards to human life. The risk assessment should consider damage to structures, embankments, and surrounding property, traffic related losses, and scour or stream channel change.

748.1.4 Common Drainage Complaints

Listed below are several common causes for drainage complaints by landowners. Consideration should be given to minimizing or eliminating, to the extent practical, these causes for complaint:

- Diversion of flow from one watercourse to another
- Collection and concentration of surface waters
- Augmentation of flow peaks or volumes
- Obstruction of flows resulting in increased backwater
- Erosion and sedimentation
- Groundwater interference

APPENDIX J – EPG 171 Maintenance Policy and Operations

Category:171 Maintenance Policy and Operations

This article links to other Engineering Policy Guide (EPG) articles to access current policies. The EPG is a combination of former manuals from Right of Way, Design, Bridge, Construction and Materials, Traffic and Maintenance and is the single reference for all engineering guidance.

Related Information

Definitions of shall, may, will and should

The EPG replaces the old Maintenance Policy Manual and is to be used by maintenance and other MoDOT personnel to execute daily departmental assignments and deal with external customers.

Direct any questions concerning specific EPG guidance to the division providing the guidance. For example, Maintenance is primarily responsible for guidance about pavement repairs, mowing, litter control and other Maintenance activities. MoDOT employees that are unclear as to which division to contact may send an email to "Engineering Policy". Engineering Policy Services maintains the EPG and assists divisions in developing new policy and revising existing policy.

This article also presents the history of these Maintenance policies.

Safety Videos

Mowing Safety (https://epg.modot.org/documents/132_Mowing_Safety.wmv)

Asphalt Operations

Safety is My Story (http://www.youtube.com/user/modotvideo)

Additional Information

Heat Safety (http://www.i/intranet/ri/documents/06-2012.pdf)

Hand Protection

Hearing Protection

Where to Find Maintenance Policy Manual Information in the EPG

Article	Policy No.	Policy Title
Administration		
	ADM(A1)	Maintenance Division's Role
	ADM(A2)	Policy Amendments
	ADM(A3)	Maintenance of Park Roads
	ADM(A4)	Construction by Maintenance Forces
	ADM(A5)	Safety in Maintenance Operations
	ADM(A6)	Private Property Damage
	ADM(A7)	Private Property Damage Numbers
Agreements		
	ADM(B1)	Maintenance Responsibilities in Cities
	ADM(B2)	Contracts for Maintenance on City Streets
Division Guidelines		
	ADM(C1)	Bulletin Boards
	ADM(C2)	Maintenance Contracts
	ADM(C3)	Functional Maintenance
	ADM(C4)	Roadway Features Inventory
Operations		
	ADM(D1)	Cold Weather Operations

Pipe/Water Flow

DRN(A1)	Polyethylene Pipe Liner
DRN(A2)	Change in Water Inflow and Outflow
DRN(A3)	Drainage Pipe Replacement
DRN(A4)	Plastic Pipe

Levees

DRN(B1)	Levee Attachments
DRN(B2)	Levee Fees and Taxes

Water Management

DRN(C1)	Industrial and Domestic Waste Waters on ROW
DRN(C2)	404 Permits
DRN(C3)	Storm Water Regulation
DRN(C4)	System Attachments by Others
DRN(C5)	Easements
DRN(C6)	Watershed Diversion

Grates and Gates

DRN(D1)	Bicycle Grates
DRN(D2)	Cattle Pass
DRN(D3)	Flood Gates

Roadsides

RDS(A1)	Commuter Parking Lots
RDS(A2)	Roadside Maintenance Activities by Others
RDS(A3)	Wetland Mitigation Areas
RDS(A4)	Heritage Database Information (HDI)
RDS(A5)	Underground Utilities

Programs

RDS(B1)	Adopt-A-Highway
RDS(B3)	Growing Together Program
RDS(B4)	Incarcerated Personnel

Rest Areas and Roadside Parks

RDS(C1)	Dispensing Free Refreshments
RDS(C2)	Rest Area Drinking Water
RDS(C3)	Rest Area Sewage Control
RDS(C4)	Roadside Park Requirements
RDS(C5)	Vending

Structures

RDS(D1)	Encroachments of Right of Way
RDS(D2)	Monuments

Vegetation Management

RDS(E1)	Billboard Visibility
RDS(E2)	Crops on Right of Way
RDS(E3)	Hay Harvesting on Right of Way
RDS(E4)	Herbicides

Article	Policy No.	Policy Title
	RDS(E5)	Mowing
	RDS(E6)	Noxious Weed Control
	RDS(E7)	Plant Collection from Right of Way
	RDS(E8)	Roadside Burning

- RDS(E9) Tree Removal
- RDS(E11) National Forest Lands

Bridge Maintenance

- BRG(A1) Utility Attachments to Bridges
- BRG(A2) Levees
- BRG(A3) High Water Marks
- BRG(A4) Navigation Lights and Light Tenders
- BRG(A5) Corps of Engineers Regulations
- BRG(A6) Cathodic Protection
- BRG(A7) Work On or Over Railroad Right of Way

Bridge Maintenance

- BRG(B1) Bridge Inspections (Span Type and Culvert Type)
- BRG(B2) Bridge Maintenance (District)
- BRG(B3) Bridge Maintenance (Division)

Restrictions

- BRG(C1) Posted Bridge Load Limits
- BRG(C2) Vertical Clearance
- BRG(C3) Temporary Clearances or Restrictions
- BRG(C4) Permits (Overdimension/Overweight)

Snow and Ice Control

- SIC(A1) Anti-Icing
- SIC(A2) Operational Closure
- SIC(A3) Intent
- SIC(A4) Winter Operations Communication Plan

Materials

- SIC(B1) Liquid Chemical
- SIC(B2) Storage
- SIC(B3) Dry Salt Supply
- SIC(B4) Salt Re-orders
- SIC(B5) Large Storage Facilities
- SIC(B6) Abrasives
- SIC(B7) Liquidated Damages
- SIC(B8) Pre-wetting

Equipment

- SIC(C1) Slow Moving Vehicle Sign
- SIC(C2) Plow Width Delineator
- SIC(C3) Truck Lighting
- SIC(C4) Cleaning Equipment
- SIC(C5) Calibration
- SIC(C6) Rented Equipment Lighting

Personnel

- SIC(D1) Personnel from other Divisions
- SIC(D2) Training
- SIC(D3) Emergency Equipment Operators
- SIC(D4) Working Hours
- SIC(D5) Shifts
- SIC(D6) On Call

- SIC(D7) Reimbursement for Meals

Operations

- SIC(E1) Order of Work
- SIC(E2) Mailboxes
- SIC(E3) Limits of Work
- SIC(E4) Emergencies Off Right of Way
- SIC(E5) Safety Precautions
- SIC(E6) Statewide Winter Road Condition Report
- SIC(E7) Abandoned Vehicle
- SIC(E8) Winter Event Database

Environmental

Solid Waste

- ENV(A1) Asbestos
- ENV(A2) Solid Waste
- ENV(A3) Tire Management
- ENV(A4) Street Sweepings
- ENV(A5) Antifreeze
- ENV(A6) Battery Management
- ENV(A7) Disposal of Animal Carcasses

Hazardous Material Spills

- ENV(B1) Hazardous Material Spills (Roadway) by Others
- ENV(B2) MoDOT Hazardous Material Spills

Rest Areas

- ENV(C1) Rest Area Lagoon
- ENV(C2) Rest Area Drinking Water

Water Management

- ENV(D1) Storm Water Regulations
- ENV(D2) Maintenance Operations in Streams
- ENV(D3) Well Closures

Containers

- ENV(E1) Fuel Storage Tanks
- ENV(E2) Herbicide Containers
- ENV(E3) Empty Drums and Containers

Environmental Compliance

- ENV(F1) Threatened or Endangered Species
- ENV(F2) Tier II Reporting

Hazardous Waste

- ENV(G1) Hazardous Waste Compliance
- ENV(G2) Lead Based Paint Abatement
- ENV(G3) Equipment Cleaning Solvents
- ENV(G4) Used Oil
- ENV(G5) Hazardous Waste Reporting

General

- ENV(H1) Open Burning
- ENV(H2) Lead Mining Chat
- ENV(H3) Sewage Disposal System
- ENV(H4) Vehicle Placarding
- ENV(H5) Fugitive Dust
- ENV(H6) Vehicle Painting
- ENV(H7) Environmental Site Assessment

ENV(H8)	Salt Runoff
Traffic Control	
TRC(A1)	Adopt MUTCD
TRC(A2)	Maintain Traffic Control for Field Operations
TRC(A3)	Quality Standards for Temporary Traffic Control Devices
Roadside Appurtenances	
RAP(A3)	Signpost Breakaway Features
RAP(A4)	Culvert Ends
Protective Barrier	
RAP(B4)	Concrete Median Barriers

Articles in "171 Maintenance Policy and Operations"

The following 12 pages are in this category, out of 12 total.

1

- 171.1 Administration
- 171.2 Buildings and Grounds
- 171.3 Roadway Maintenance
- 171.4 Shoulders and Approaches
- 171.5 Drainage
- 171.6 Roadsides
- 171.7 Bridge Maintenance
- 171.8 Snow and Ice Control
- 171.9 Environmental
- 171.10 Traffic Control
- 171.11 Roadside Appurtenances
- 171.12 Maintenance Policy History

APPENDIX K – EPG 171.6.4 Vegetation Management

Notice of Encroachment RDS(D1)A (http://sp/sites/mt/roadsides/_layouts/15/WopiFrame.aspx?sourcedoc={81EA3CEB-240A-4E7D-9315-668F2AE9113F}&file=Notice%20of%20Encroachment.docx&action=default&DefaultItemOpen=1)

Removal Notice RDS(D1)B (http://sp/sites/mt/roadsides/_layouts/15/WopiFrame.aspx?sourcedoc={073BF584-812B-4F84-8DFD-02EA22F1AC16}&file=Notice%20To%20Remove%20Encroachment.docx&action=default&DefaultItemOpen=1)

Unauthorized Items off Roadsides Flier

RDS(D2) Monuments

MoDOT permits approved organizations (State Historical Society of Missouri, Federated Garden Clubs of Missouri and the Daughter's of the American Revolution) to place markers at approved locations along highways within the bounds of rest areas, roadside parks or turnouts. These markers are located for the purpose of honoring service men and women who served in a particular war or to designate points of historical interest.

Placement of markers and tablets requires Commission approval.

Additional information is available from the Roadside Section (http://sharepoint/systemdelivery/MT/SitePages/Roadsides.aspx) in the Central Office.

171.6.4 Vegetation Management

RDS(E1) Billboard Visibility

Refer to EPG 236.16.8 Vegetation Removal concerning the management of vegetation around billboards.

RDS(E2) Crops on Right of Way

Refer to EPG 822.7 Hay and Other Crops on the Right of Way.

RDS(E3) Hay Harvesting on Right of Way

Refer to EPG 822.7 Hay and Other Crops on the Right of Way.

RDS(E4) Herbicides

Refer to EPG 821 Herbicides and Roadsides.

RDS(E5) Mowing

Refer to EPG 822 Roadside Vegetation Management.

RDS(E6) Noxious Weed Control

Refer to EPG 821.18 Noxious Weeds.

RDS(E7) Plant Collection from Right of Way

No person shall dig or remove any plants or plant parts from any real property of the Commission or the right of way of any state highway or roadway without permission. Special permits covering the collection of plants and plant parts from highway right of way may be issued by MoDOT. Provided that such plants or plant parts are not offered for sale, the collection of seeds, fruits, nuts, berries, edible wild greens or flowering parts of plants, or the occasional collection of plants for the purposes of scientific research or education may be permitted.

Under special circumstances, MoDOT can write a permit, to collect and sell plants or plant parts from right of way. Contact the Roadside Section (http://sharepoint/systemdelivery/MT/SitePages/Roadsides.aspx) for information.

RDS(E8) Roadside Burning

Refer to EPG 127.25.8.1 Open Burning for information pertaining to the open burning of materials on MHTC property.

RDS(E9) Tree Removal

Trees located on Missouri Highways and Transportation Commission (MHTC) property are considered state property. Trees on MHTC property that are dead, diseased, deformed or storm damaged, have the potential to create a safety hazard to MHTC personnel as well as the traveling public. Efforts should be made to minimize the potential hazard.

Utility companies should be contacted prior to removing trees under or near utility lines, for possible assistance or removal by their crews. Commercial arborists may be obtained on an agreed price basis for removal of large trees especially where there is a possibility of damage to private property.

Tree trunks and tree limbs may be cut up by department personnel and hauled back to the maintenance building for use as firewood at the maintenance building, or stockpiled at the maintenance site, and ultimately sold per General Services policies concerning the disposal of surplus property. A copy of the "GS22 Bill of Sale – Generic" (http://sharepoint/support/CC/CCO%20Contracts/GS_-_General_Services/Bills_of_Sale/GS22_Bill_of_Sale-_Generic.docx) for the tree trunks and tree limbs sold as surplus property shall be maintained by MoDOT in accordance with the policies pertaining to surplus property disposal.

Tree trunks and tree limbs may be cut into manageable lengths (not less than 2 ft. long and not more than 6 ft. long) and left on the adjacent property owners property at the right of way line for use by the adjacent property owner provided the adjacent property owner has expressed a desire to use the wood. The adjacent property owner shall obtain access to the wood from their own property. The adjacent property owner shall not utilize MHTC right of way to gain access to the wood.

Root-balls associated with tree removals are not considered to be clean fill according to the Missouri Department of Natural Resources. Therefore, root-balls shall not be buried. They may be hauled off to a demolition landfill, or they may be ground up using a tub grinder.

Any burning of tree trunks, tree limbs, or root-balls on the right of way shall be done according to the EPG 127.25.8.1 Open Burning.

Tree stumps anywhere on the right of way shall be cut flush or below ground level. Treatment of tree stumps to prevent re-growth shall be in accordance with EPG 821 Herbicides and Roadsides.

Personnel engaged in the removal of dead, diseased, deformed, or storm damaged, trees shall be trained in the safe operation of chainsaws and other tree trimming devices.

Personnel must also be familiar with the applicable safety guidelines as set forth in MoDOT's Safety Policies, Rules & Regulations (http://lnapp1/RI/RIManual.NSF/SHToC?OpenView).

MoDOT staff shall be in compliance with Personnel Policy # 2700 – Ethical Conduct when disposing of tree trunks and tree limbs. Also, staff should comply with the U.S. Fish and Wildlife Service concerning protection of Indiana bat tree habitat. Questions regarding Indiana bat trees should be directed to the Environmental Section (http://sharepoint/sites/de/environmental_historic_pres/SitePages/Home.aspx) of Design.

Trees associated with construction projects shall be managed according to the conditions contained in the contract documents.

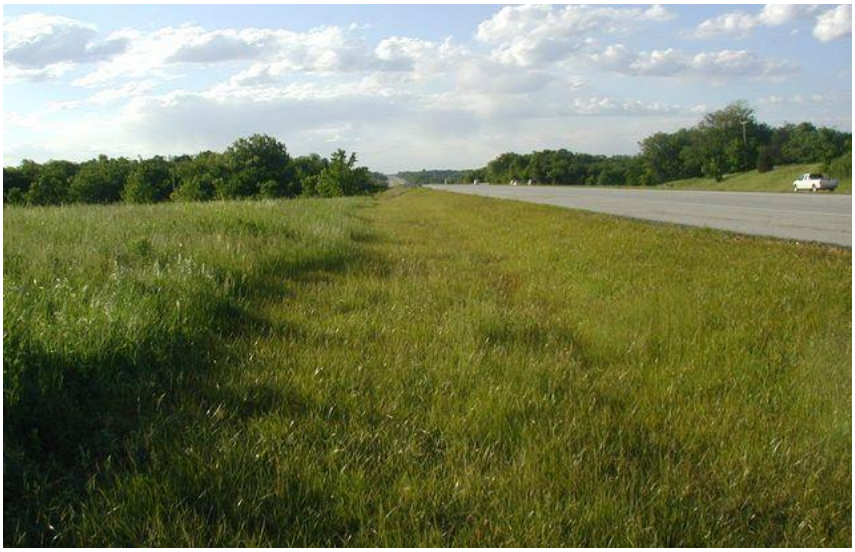
RDS(E11) National Forest Lands

MoDOT shall coordinate with the Forest Service all maintenance activities which involve additional clearing, slash disposal, chemical control of vegetation, disposal of slough material, changes in road drainage patterns, materials source and storage and similar actions which involve highways through National Forest lands. The Forest Service will assist MoDOT with matters related to equipment parking, material storage, material sources, and designated slough and slide material disposal areas as well as advising the department of any activities that have an impact on highway maintenance.

APPENDIX L – EPG 821 Herbicides and Roadsides

Category:821 Herbicides and Roadsides

821.1 Introduction



Pesticides are in a broad category including insecticides, herbicides, algicides, miticides and several other chemicals specific to a particular target. Insecticides are chemicals used to control insects.

Herbicides are chemicals designed to control plant growth. When applied at the correct rate, proper time and method, with the proper equipment in suitable weather conditions, herbicides accomplish their manufacturer's claims. MoDOT recognizes herbicides as one of the tools used in vegetation management, the same as a lawn mower or brush hog. This is referred to as Integrated Vegetation Management or IVM. It is a practice of site evaluation and using the best resources you have available to maintain the desired vegetation management. Within IVM programs, herbicides are judiciously applied in a focused, selective manner. Herbicides are used to eliminate invasive plants proven difficult to manage by hand or mechanical maintenance methods. The word "chemical" often raises a red flag with the public. Some express great concern about applying a synthetic chemical to control a noxious weed yet we introduce a synthetic chemical into our own bodies to control diseases in the form of medications. Medicine is used to control and prevent disease; herbicides are used to control and prevent vegetation. Both can create disastrous results if not used correctly, but when used correctly, can improve the quality of life.

The purpose of this article is to ensure we use herbicides correctly along Missouri roadsides. MoDOT has guidelines for the planning and ordering of herbicides as well as their storage and inventory control.

An operator is to determine the target, select the proper herbicide, apply at the correct time, rate and method, use well-maintained equipment and protect himself or herself, other employees, the public and the environment.

Maintenance planning guidelines for chemical weed control are available.

Additional Information

The Missouri Dept. of Agriculture provides information about pest managment (http://mda.mo.gov/plants/ipm/)

821.1.1 Labels are the best source of information

EPG 821 takes information from the manufacturer's label on each herbicide and applies it to uses on highway right of way. Operators and their supervisors must read and follow the label. The label is the law.

The rates listed in this article are recommended rates for Missouri roadsides. The product label will list a wide range of rates since the manufacturer must consider all parts of the country with a broad range of soil and seasonal conditions. Rates listed here are what have been successfully used in Missouri with the concurrence of the manufacturer's representative.

MoDOT is very concerned about the safe use of herbicides for the operator, the public and the environment, both on and off the right of way. This is why we do not use or purchase restricted use herbicides (or RUPs, restricted use products). We encourage employees to attend training sessions offered each year by MoDOT. Employees are also encouraged to obtain and maintain a Certified Public Operators License offered each year in cooperation with MoDOT and the Department of Agriculture. This license is for the application of pesticides on the rights of way if employed and doing the work for a public agency such as MoDOT.

Safety equipment, commonly referred to as personal protection equipment (PPE), will be furnished to mix and apply herbicides. This equipment must be used when required, as stated on the label. Unnecessary use of safety equipment is discouraged due to the possibility of heat-related problems.

Protect yourself from splashes or spills during mixing. To reduce exposure to herbicides, use common sense and personal hygiene practices such as washing hands, arms and face frequently, changing clothing daily, not walking in areas treated when still wet and monitoring the wind direction and speed, wash clothing separately at home and use care when climbing on truck or sprayer because of wet surfaces. It is highly recommended to keep a separate tank of clean water on the spray truck to flush immediately if a spill occurs.

Maintenance (http://wwwi/maintenance/) bids herbicides annually for the entire state. When new herbicides are received, the previous year's stock is to be placed where it will be used first. This is referred to as "First In First Out" (FIFO). District maintenance is to be notified if there is an oversupply of one or more herbicides.

Several companies manufacture and sell herbicides such as 2,4-D and glysophate under various names. Operators are to properly identify herbicides before mixing. The label is the best source of information.

821.1.2 Only herbicide combinations permitted by MoDOT are listed in this article

Operators and supervisors should know the visual effects of the herbicides used by MoDOT. Some herbicides such as 2,4-D, may have a noticeable effect within hours under certain weather conditions. Others may take days, weeks, or in the case of Krenite S, as much as nine months for the results to be visible. This article also contains guidelines for special conditions such as those for problem weeds, woody plants, aquatic areas and landscaped areas.

Record keeping is an important part of all maintenance activities including herbicide application. The operator **shall** record the date, route, weather conditions, material sprayed, target and rate of application daily. The standard spray log is included in EPG 821.8 Record Keeping. Spray logs should be kept with the unit of operation during the season and then the records kept for three years.

Successful maintenance operations depend on well-maintained equipment. Equipment will be operated by someone who receives training and knows the capabilities and limitations of that equipment. In herbicide application, it is very important that the spray equipment is clean, in good operating order and properly calibrated.

In summary, the important steps for an operator to follow are to

- determine the target
- select the proper herbicide
- apply at the correct time, rate and method, using well-maintained equipment
- and protect yourself, fellow employees, the public and the environment.

Other topics in this article include plant growth regulators, traffic control for spraying operations, how to report an herbicide spill incident and additives and adjuvants. Forms, a glossary and a listing of products has also been included.

Articles in "821 Herbicides and Roadsides"

The following 25 pages are in this category, out of 25 total.

8

- 821.2 Safety
- 821.3 Public Relations
- 821.4 Pesticides and the Environment
- 821.5 Storage Facilities
- 821.6 Inventory Control and Storage
- 821.7 Planning and Ordering
- 821.8 Record Keeping
- 821.9 Labels and Safety Data Sheets (SDS)
- 821.10 Equipment and Application Methods
- 821.11 Calibration
- 821.12 Mixing and Handling Guidelines
- 821.13 Traffic Control for Spraying Operations
- 821.14 Herbicide Spills Incident Reporting
- 821.15 Forms and Conversions
- 821.16 Total Vegetation Control Treatment
- 821.17 Plant Growth Regulators (PGRs)
- 821.18 Noxious Weeds
- 821.19 Problem Weeds
- 821.20 Woody Plant Control
- 821.21 Aquatic Areas
- 821.22 Weed Control in Landscaped Areas
- 821.23 Additives and Adjuvants
- 821.24 Glossary
- 821.25 Products
- 821.26 Maintenance Planning Guidelines for Chemical Weed Control

APPENDIX M – EPG 822 Maintenance Planning Guidelines for Mowing Operations

Category:822 Roadside Vegetation Management

MoDOT's roadside management philosophy is to preserve, enhance and diversify the roadsides of Missouri's transportation system. Our roadside management program helps keep Missouri roadsides safe and attractive. This program establishes and maintains desirable roadside vegetation to control erosion. Another aspect of this philosophy is to promote, preserve and establish pollinator-beneficial habitats when feasible.

SAFETY BEGINS WITH ME

Safety Video

Mowing Safety (https://epg.modot.org/documents/132_Mowing_Safety.wmv)

Other Information

Heat Safety (http://www.i/intranet/ri/documents/06-2012.pdf)

This is accomplished through several methods including an effective herbicide program, fertilization, mowing, brush control and litter removal. Wildflower and native grass plantings, landscaping and naturalized vegetation are also part of maintaining and improving safety and roadside appearance. Combining different management practices, such as these, form an Integrated Roadside Vegetation Management (IRVM) program.

The sharing of best practices among districts results in greater efficiency and effectiveness. Money is saved on labor and mobilization by making mowing a focused priority during scheduled times. Consistency is also improved.

Roadside Vegetation Management Policy

Vegetation in sight distance areas shall be controlled as necessary on all routes.

Equipment shall not be used on slopes steeper than 1V:3H (3 to 1) unless designed for that purpose. Reliable, manufactured slope indicators shall be used on all mowing equipment.

New trees or hardscape features shall not be permitted within 30 ft. from the nearest traveled way. This distance is extended to 40 ft. on routes with 65-70 mph speed limits. Exceptions may be permitted if behind barriers or if other special circumstances exist.

Printable Version of EPG 822 Roadside Vegetation Management

Roadside Vegetation Management

(as of mid-2017)

Vegetation shall be removed that interferes with the visibility of MoDOT signs.

Traffic control shall be performed according to the most recent edition of EPG 616.23 Traffic Control for Field Operations.

Noxious weed control shall be done on all routes, as required by federal, state and county laws and regulations. Noxious weed control shall be by either chemical or biological means.

EPG 822 presents the very latest guidance and this pdf file of EPG 822 through EPG 822.6 may be helpful for those wanting to easily print the Roadside Vegetation Management information.

Vegetation management practices shall not conflict with efforts to protect state and federally designated endangered species. Refer to the Natural Heritage Database Information (https://epg.modot.org/index.php?title=171.6_Roadsides#RDS.28A4.29_Heritage_Database_Information_.28HDI.29). Contact the Design Division's Environmental Section at (573) 526-47786 for assistance.

Design Aspects of Mowing

Mowing should be specified for projects requiring significant mowing during construction. The project core team, with significant input from district Maintenance, should determine which projects will require mowing during construction. The district should include in the proposal the job special provision titled "Mowing", JSP-00-11 (https://spexternal.modot.mo.gov/sites/de/_layouts/15/WopiFrame.aspx?sourcedoc=%2Fsites%2Fde%2FJSP%2FJSP0011%2Edoc&action=view&source=https%3A%2F%2Fspexternal%2Emodot%2Emo%2Egov%2Fsites%2Fde%2FJSP%2FForms%2FJSPByTitle%2Easpx%3FGroupString%3D%253B%2523Non%2520Standard%253B%2523%26IsGroupRender%3DTRUE). This special provision specifies mowing the entire project limits, but if only specific areas are to be mowed, the designer needs to specify those locations in the special provision. Specific locations to be mowed and approximate number of mowings should be coordinated with district Maintenance.

Roadside Inventory, Environmental

Report 2005 (http://library.modot.mo.gov/RDT/reports/Ri01007/or06005.pdf)

Report 2004 (http://library.modot.mo.gov/RDT/reports/Ri01007/Stat2004.pdf)

See also: Research Publications (https://www.modot.org/research-publications)

Articles in "822 Roadside Vegetation Management"

The following 9 pages are in this category, out of 9 total.

8

- 822.1 Vegetation Management for Major Roads
- 822.2 Vegetation Management for Minor Roads
- 822.3 Vegetation Management for High Profile Areas
- 822.4 Recommended Practices
- 822.5 Definitions
- 822.6 Hay and Other Crops on the Right of Way
- 822.7 Maintenance Planning Guidelines for Mowing Operations
- 822.8 Maintenance Planning Guidelines for Brush Cutting
- 822.9 Maintenance Planning Guidelines for Tree Removal

APPENDIX N – EPG 171.7 Bridge Maintenance

171.7 Bridge Maintenance

Contents

BRG(A1) Utility Attachments to Bridges

Refer to EPG 643.3 Policy, Standards and Regulations concerning issuance of permits for utilities and EPG 643.3.16 General Guidelines for Bridge Attachments concerning the attachment of utilities to bridges. Failure of a utility to maintain the attachment to the bridge shall be reported to the District Utility Engineer.

BRG(A2) Levees

See DRN(B1) Levee Attachments and DRN(B2) Levee Fees and Taxes.

BRG(A3) High Water Marks

refer to EPG 748.2 Roadway Overtopping, High Water Marks concerning the requirements for marking high water marks during flood situations.

BRG(A4) Navigation Lights/Light Tenders

Refer to EPG 770.4 Navigation Lights/Light Tenders concerning navigation light maintenance and inpsection.

BRG(A5) Corps of Engineers Regulations

Refer to DRN(C2) 404 Permits.

BRG(A6) Cathodic Protection

Refer to EPG 774.4 Maintenance Procedures concerning the maintenance of bridge deck with cathodic protection.

BRG(A7) Bridge Repairs Near, On or Over Railroad Right of Way

Refer to EPG 643.4.4.1 Railroad Crossing Safety concerning safety and notification requirements associated with bridge maintenance activities over or within 25 horizontal ft. of the centerline of an active railroad track.

171.7.1 Bridge Maintenance

BRG(B1) Bridge Inspections (Span Type and Culvert Type)

Refer to EPG 772 Bridge Inspections concerning the types of bridges to be inspected and the frequency of the inspections.

BRG(B2) Bridge Maintenance (District)

Refer to EPG 770.1 District Routine Maintenance and Special Crew Responsibilities for the Bridge Maintenance tasks district Maintenance personnel are responsible.

BRG(B3) Bridge Maintenance (Division)

Refer to EPG 770.2 Regional and Central Office Bridge Maintenance Crew Responsibilities for examples of bridge maintenance items the respective crews are responsible to perform.

171.7.2 Restriction

BRG(C1) Posted Bridge Load Limits

Refer to EPG 770.5 Posting of Bridge Limits for how load carrying capacities of bridges are to be posted.

BRG(C2) Vertical Clearance

Refer to EPG 760.4 Vertical Clearance concerning the legal height limits for vehicles and the responsibility for measuring and reporting vertical height clearances for roadway structures.

BRG(C3) Temporary Clearances or Restrictions

Refer to EPG 760.4.3 Measurement Requirements concerning the measurement, input and notification of other divisions regarding temporary vertical clearances and lane width restrictions due to construction or maintenance work.

BRG(C4) Permits (Overdimension/Overweight)

Rules and regulations on the movement of overdimension and/or overweight loads are established by the Commission and Chief Engineer based on State Statute and are on file with the Secretary of State. Permits for this movement may be obtained at Motor Carrier Services (http://wwwi/intranet/mc/), by phone at 800-877-8499. Permits for overdimension loads and non-commercial building movement shall be issued by district office staff for local customers. Permits for all other movement may be obtained at the district by allowing walk-in customers to fax Motor Carrier Services. A permit agent will issue the permit and fax it to the customer at the district office.

District staff should observe the movement of large overdimension and/or extra heavy overweight loads that may cause damage to MoDOT facilities or have a significant impact on traffic movement. Motor Carrier Services will provide copies of all permits issued to the district(s) involved for loads over 16 ft. 6 in. tall, 17 ft. 0 in. wide or 240,000 pounds. District staff should determine which loads are most critical for observance, based on the permitted route. If the permitted move is not made according to the provisions of the permit or any MoDOT facilities are damaged, a report shall be made to Motor Carrier Services.

When permitted loads are moved across more than one district, the original district should notify the next district of problems (if any) encountered with the movement in their area. If the movement was proper and no problems were encountered, it may not be necessary to observe that load in other districts. As part of the quality assurance program, it is recommended that at least 10 percent of the permits issued for larger dimensions and weights (listed above) be observed by district staff.

Reason for policy:

- RSMo 304.170 - 304.210 (State Laws (https://revisor.mo.gov/main/OneSection.aspx?section=304)), Traffic Regulations as to width, height and length of vehicles - exceptions.

Effective Date: 6/1/99

Revision Dates:

APPENDIX O – EPG 133 Snow and Ice Control

Category:133 Snow and Ice Control

This article is to be used by Maintenance and other MoDOT personnel to execute daily assignments and deal with external customers. Materials and equipment used in snow and ice control are addressed in this article. Districts may use any safety sensitive personnel designated by the district engineer in emergency situations and as indicated by the particular emergency. Snow and ice control operations as well as the Operator's Guide for Anti-Icing are included in this article.

Contents

Related Information

Incident Response Plan and Emergency Response Management

MoDOT Snow Academy Official Guide, Participant's Manual (http://wwwi.dot.missouri/intranet/hr/hred/documents/MoDOTSnowAcademyparticipantbook.pdf) and Snow Academy Website (http://wwwi.dot.missouri/intranet/hr/hred/roadeo.htm)

Snow Plowing Practices

Summary 2009 (http://library.modot.mo.gov/RDT/reports/ad09077/orb09003.pdf)

See also: Research Publications (https://www.modot.org/research-publications)

Anti-Icing

Anti-icing is the snow and ice control practice of preventing snow or ice from bonding to the pavement. Anti-icing forms the basis of MoDOT's snow and ice control program. De-icing will be practiced if and when weather conditions render anti-icing activities ineffective.

Reason for policy: National research shows anti-icing to be the most cost effective snow and ice control program.

Effective Date: 6/1/99

Revision Dates: 6/17/03

Operational Closure

In the event a storm reaches an intensity that the continuation of operations would prove ineffective or would pose an undue safety risk for MoDOT personnel and/or the traveling public, snow and ice control activities should be shut down until weather conditions have improved. The district engineer or designee is responsible for making a closure decision. The MoDOT Emergency Operation Center (EOC) is to be notified of any such closure decision.

Reason for policy: Reserve department resources for when they can be used more effectively

Effective Date: 6/1/99
Revision Dates: 6/17/03, 10/14/05

Intent

Snow and ice control operations should begin as soon as weather conditions warrant and continue on a 24-hour per day basis until all objectives outlined in this policy are met and sustained. Refer to EPG 133.4 Snow and Ice Control Operations.

Reasons for policy: Meet customer needs and set statewide performance standards.

Effective Date: 6/1/99
Revision Dates: 6/17/03. 10/14/05, 12/01/06, 8/16/07, 9/01/10

Winter Operations Communication Plan

Communication is critical to enhancing situational awareness during winter weather events. Communication between maintenance buildings, maintenance areas, districts and the central office is necessary to understand where the greatest needs are for resources during any particular event, but more so during major winter storms that affect a good portion of the state. Each district shall have a communication plan in place to disseminate information between the buildings, areas and district office.

The following guidelines shall be used to facilitate communication between districts and between districts and the central office before and during winter events.

- As storms begin in a district, that district shall contact the neighboring district in the direction that the storm is moving to inform them of the timing and intensity of the storm.
- Contact with neighboring districts after normal working hours, prior to the other district activating their EOC, can be made using the snowstorm contacts and phone numbers. Refer to http://wwwi/intranet/tr/emerg_response.htm (http://wwwi/intranet/tr/emerg_response.htm) for links to the Emergency Contact List, which is part of the Incident Response Plan (http://wwwi/intranet/tr/irp/default.htm).
- During a storm, contact can be made using the other district's Emergency Operation Center (EOC) phone number or by contacting the neighboring Maintenance personnel directly.
- Each Maintenance manager (from Maintenance Supervisor on up) shall have a list of cell phone numbers and radio call numbers for all surrounding Maintenance managers, including those in neighboring districts, to

coordinate continuity of route treatments between areas and districts.

- Each Maintenance manager whose area borders other states shall have a contact list for their counterparts in those bordering states to share storm information and, if possible, coordinate continuity of route treatments.
- Each district shall call the central office EOC phone number to announce activation and deactivation of the district EOC, and to notify the central office EOC of any incidents with statewide significance.
- Central office EOC will send updates to appropriate email distribution list(s) with district EOC activation/deactivation information, as well as any major incident information.
- Conference calls will be scheduled for all districts and the Central Office EOC (http://wwwi/intranet/tr/emerg_response.htm) at times designated by the Asst. Chief Engineer, State Maintenance Engineer and/or State Traffic Engineer.

Articles in "133 Snow and Ice Control"

The following 5 pages are in this category, out of 5 total.

1

APPENDIX P - EPG 127.25.1.4

127.25.1.3 Tire Management

Waste tires unsuitable for sale or recapping shall be disposed of under state contract CCO form MT15 (http://sp/sites/eagreements/SitePages/Home.aspx). Contact an Environmental Specialist for current contract information. Burning tires or tire pieces is prohibited. Tires and tire pieces shall be stored in a manner that avoids providing a mosquito-breeding site. Twenty-five or more whole tires stored at any one site must be covered. Maintain an inventory of less than 500 whole tires at any one site, at any one time, unless they are loaded on a truck for disposal.

Reason for Policy: 10 CSR 80-8.010 - 80-8.040 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c80-8.pdf) Solid Waste Management

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.1.4 Street Sweepings

Street sweepings are considered solid waste by the Missouri Department of Natural Resources (MDNR) (http://www.dnr.mo.gov/). The sweepings must be disposed of in a permitted sanitary landfill. An exception from disposal in a landfill has been granted by MDNR. To qualify for the exemption, the street sweepings must meet the beneficial use requirements as established by MDNR.

Landfill Disposal: Sanitary landfills may require street sweepings be analyzed prior to disposal. Please work with the sanitary landfill and the appropriate Environmental Specialist in Design Division to complete the process. Landfills will sometimes issue permits for up to 3 years for analyzed street sweepings.

Beneficial Use: To qualify for the beneficial use exception, the sweepings must be composed of grit and dirt from the roadway surface and only minor amounts of trash, litter or automotive parts can be present in the sweepings. The sweepings can contain asphaltic concrete materials as clarified in the April 2010 MDNR approval letter.

MDNR Approval Letters and Street Sweeping Sampling Information

Street Sweep MDNR 2007 letter

Street Sweep MDNR 2010 letter

Street Sweep Guidance/Beneficial Use Approval

Street Sweep Sampling Protocol

Street sweepings need to be processed or screened to remove trash, litter and other debris. If the screenings still contain excessive amounts of trash, litter or other debris, additional processing will be required; or the materials will need to be disposed in a landfill. All of the trash, litter and other debris removed by the screening process shall be disposed of in a sanitary landfill.

Sampling and testing of the screened grit and dirt material is required by MDNR. At least one sample must be collected for every 500 cubic yards of screened material created. The guidance in the sampling protocol must be followed. This includes proper sample collection, preservation and analysis by MoDOT's chemical laboratory. Questions regarding the sampling protocol should be directed to the appropriate Environmental Specialist in Design Division.

A copy of the sample results must be kept on file at the Maintenance building where the screenings were processed and a copy of the sample results needs to be provided to the Environment section of the Design Division.

Reason for Policy: 10 CSR 80 (http://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp#10-80) Solid Waste Management Regulations and RSMo 644 (https://revisor.mo.gov/main/OneSection.aspx?section=644) Missouri Clean Water Law.

Effective Date: 6/1/99

Revision Dates: 8/26/21

127.25.1.5 Antifreeze

In the ANTIFREEZE WASTE MANAGEMENT GUIDE DNR Publication 114 (http://dnr.mo.gov/pubs/pub114.htm), waste antifreeze is not a listed hazardous waste under the federal hazardous waste regulations in 40 Code of Federal Regulations (CFR) 261 Subpart D (https://www.law.cornell.edu/cfr/text/40/part-261/subpart-D), but antifreeze may contain metals, particularly lead, and other substances that would cause it to be classified as a characteristic hazardous waste (40 CFR 261 Subpart C (http://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol27/xml/CFR-2012-title40-vol27-part261-subpartC.xml)). Spent antifreeze from vehicle maintenance activities shall be collected and processed through a MoDOT antifreeze recycler. Antifreeze that is not reused in the vehicle must be sent to a recycler that accepts antifreeze. Antifreeze may never be discharged to storm sewers, septic systems, streams or on the ground.

Reason for Policy: 10 CSR 25-5.262 (http://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c25-5.pdf), Hazardous Waste Management Program. Reduce antifreeze cost and disposal cost.

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.1.6 Battery Management

All non-rechargeable batteries shall be managed as a solid waste. All rechargeable batteries shall be recycled with an approved recycler. Place cracked lead acid batteries in an acid safe container and contact your battery recycler or Environmental Specialist for specific information. All lead acid batteries should be inside secondary containment.

Reason for Policy: 40 CFR 266.80 (http://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol27/pdf/CFR-2011-title40-vol27-sec266-80.pdf) Rechargeable batteries contain specific hazardous components such as nickel, cadmium, mercury, lead and sulfuric acid that cause the batteries to be a hazardous waste unless they are sent to a recycler, DNR publication 2058 (http://dnr.mo.gov/pubs/pub2058.htm).

Effective Date: 6/1/99

Revision Dates: 10/27/15

127.25.1.7 Disposal of Animal Carcasses

Animal carcasses found on MoDOT right of way shall be disposed of properly. MoDOT's primary responsibility of Highway Safety requires removal of all traffic hazards in a timely manner from the active roadway. Options for disposal are listed below under Accepted Disposal Practices. It is the supervisor's responsibility to choose the option that best suits the needs of their particular area. Disposal practices other than the accepted practices listed below will require State Maintenance Director approval.

APPENDIX Q -EPG 133.4

133.4 Snow and Ice Control Operations

Contents

133.4.1 Route Classifications

Continuous operations routes are given top priority. Continuous operations are the plowing and application of snow and ice control treatments on an as needed basis for a designated route, throughout the storm until all lanes are restored to a near normal condition. A district continuous operations system shall include all major highways, minor highways with traffic volumes of 2,500 AADT or greater and other urban and community routes designated by the district in consultation with the Maintenance Division. Continuity of route treatments as well as coordination with adjoining districts (regardless of AADT) shall be addressed between the districts. Snow and ice control shall follow these guidelines and objectives for determining route priorities, during winter events.

Continuous Operations Routes: These routes include all major highways, minor highways with 2,500 AADT or greater traffic volumes and other urban and community routes designated by the district in consultation with the Maintenance Division. This also includes all designated incident bypass routes.

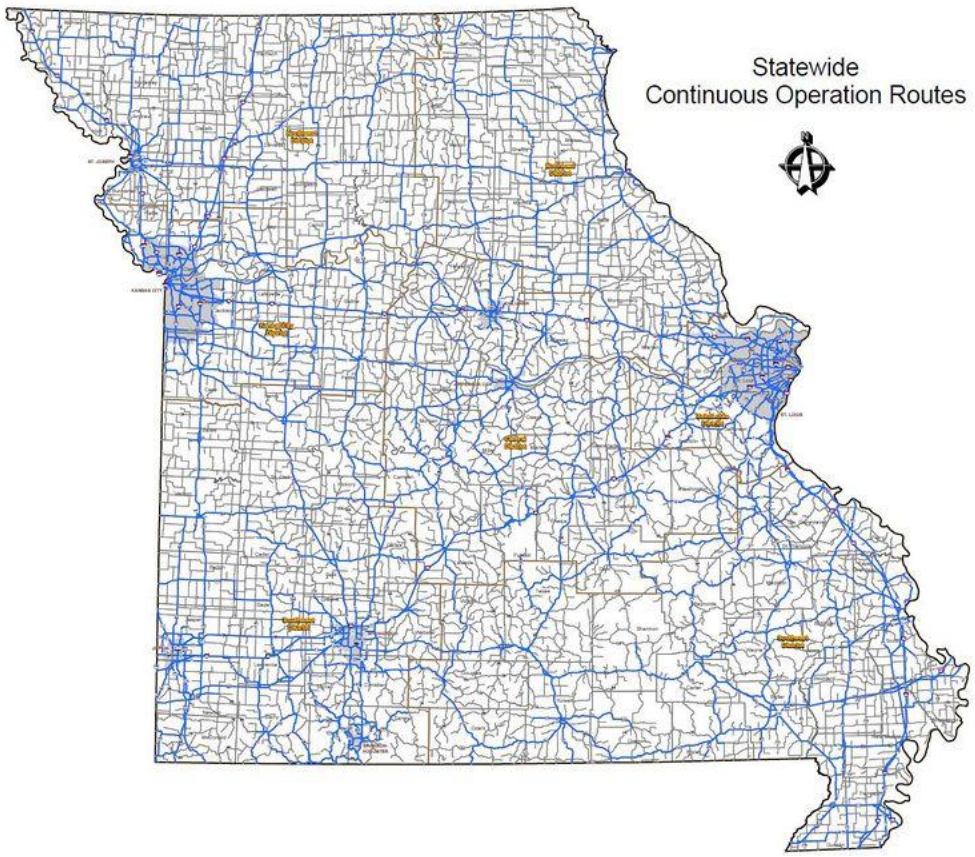
The objective is to have all lanes on these routes restored to a near normal condition as soon as practical after the end of the storm. To achieve this objective, plowing and/or application of snow and ice control treatments on an as needed basis on these designated routes, 24 hours per day throughout the storm, will be necessary. Interstates and other higher AADT routes will be plowed and treated first. The use of anti-icing methods is appropriate for continuous operations routes.

Continuous Operations Route Paved Shoulders: Removing snow and ice from major route paved shoulders should be performed in conjunction with plowing of the traveled lanes, especially the high sides of superelevated curves, if drifting is occurring, if weather predictions are unfavorable or to reduce ramping situations. The objective is to have paved shoulders for continuous operations routes plowed during, or shortly after, the storm. Do not treat paved shoulders directly with anti-icing or de-icing chemicals. It is acceptable for paved shoulders on continuous operations routes to remain covered or partially covered when snow and ice operations are suspended. It is not necessary to return paved

shoulders to a near normal condition. Paved shoulders next to extended or continuous traffic barriers, bridge parapets, impact attenuators, guardrails, curbs, narrow medians and gore areas should be given special consideration where snow accumulates and has the potential to form ramps.

Non-Continuous Operations Routes: All other state highways not included in the Continuous Operations Routes.

The objective is to have these routes open to two-way traffic and treated with salt and/or abrasives on hills, curves, intersections and other areas as needed. It is allowable for these routes to be plowed and the surface remain partly covered or covered when snow and ice operations are suspended. 24-hour per day coverage may be appropriate until the objective has been met. These routes should be prioritized by traffic volume. Reasonable efforts will be made to ensure that all roads have received some level of attention prior to morning and evening rush hours.



Statewide Continuous Operations Routes Map
Continuous Operations Routes are the Major Routes and "regionally significant" Minor Routes.

Below are easily printable district maps of Continuous Operations Routes:

Northwest District | **Northeast District**
Kansas City District | **Central District**
Saint Louis District | **Southwest District**
Southeast District

Plowing: Plowing operations should not begin until there is enough accumulation to warrant this effort. After the storm is over, plowing should cease once the loose accumulation is removed on minor routes and the continuous operations routes are in a near normal condition. On minor routes, plowing will begin as soon as snow equipment becomes available from higher priority routes.

Sight distance: Sight distance locations such as at intersections and interchanges should be cleared of any obstructions caused by snow piles or accumulations.

Duration of Operations: Snow and ice removal operations shall remain in effect on a 24-hour per day basis until the above-mentioned objectives are met and sustained for both major and minor routes, so long as an acceptable level of

Related Information

MoDOT Snow Academy Official Guide, Participant's Manual (http://wwwi/intranet/hr/hred/documents/MoDOTSnowAcademyparticipantbook2009.pdf)

progress can be achieved.

Post-storm clean up: Post-storm clean up during normal working hours includes continued plowing and treating of minor routes, bridge flushing and sweeping, equipment cleaning and maintenance, and salt storage housekeeping. The use of overtime for these activities is at the discretion of the district engineer.

Refer to Intent.

Reasons for policy: To ensure the routes with the most traffic are cleared first and provide uniform statewide snow removal practices.

Effective Date: 6/1/99
Revision Dates: 6/17/03, 10/14/05, 12/01/06, 8/16/07, 9/01/10

133.4.2 Mailboxes and Snow and Ice Control

MoDOT shall repair or replace, as required, those mailboxes and posts that have been damaged due to snow and ice removal operations. Replacement mailboxes shall comply with Post Office standards. Questionable situations should be referred to risk management.

Reasons for policy: To establish a procedure for dealing with these situations, ensure each situation is handled in the same manner and ensure continuous mail service.

Effective Date:6/1/99

133.4.3 Limits of Snow and Ice Control Work

MoDOT does not assume responsibility for the removal or clearance of snow, ice or sleet, or the opening of windrows of such material, on any sidewalk or entrance along any state highway even though snow, ice or sleet, is deposited or windrowed on these sidewalks or entrances by department personnel. Maintenance and urban agreements with municipalities, in most cases, call only for the plowing of snow from the traveled portions of the street or roadway and there is no obligation to plow parking lanes or to remove the snow deposited from plowing the traveled way.

Reasons for policy: MoDOT's responsibility is snow removal from state highways in a timely manner and liability problems with use of equipment on private property

Effective Date: 6/1/99

133.4.4 Emergencies Off Right of Way

In the event of life threatening emergencies, MoDOT will respond to a request from an official or medical entity such as State Highway Patrol, police, sheriff, paramedical, ambulance service, doctor or fire department to open a non-MoDOT system road closed by snow. Other catastrophic events will require authorization by the district engineer.

Reason for policy: Establish procedures for off system snow removal work in emergency situations

Effective Date: 6/1/99
Revision Dates: 6/17/03

133.4.5 Safety Precautions during Snow and Ice Control

Lights - Lights and snow plow reflectors shall be checked repeatedly to ensure they are in good condition, operating properly and visible to all traffic. Operators shall clean all lights periodically during storms.

Stopping on Roadways - Equipment should not be stopped on the roadway surface to engage spreaders, or talk to another operator. Equipment should be pulled off the roadway to a safe spot to perform these tasks.

Slow Moving Equipment - Slow moving equipment shall stop occasionally at safe turn out locations to allow traffic to pass.

Flaggers and Signing - Flaggers and appropriate signing shall be used during post storm operations when shifting snow, cleaning bridge decks, loading snow or any operation which interferes with the normal flow of traffic.

Bridges - Operators shall avoid pushing snow over bridge railings onto roads or railroads.

Railroad Crossings - Always raise the snow plow or grader blade to adequate clearance before crossing. Notify railroad authorities in case crossing cannot be cleared at once. Spreaders should be shut off through crossing

Reason for policy: Establish safety procedures for snow and ice removal operations

Effective Date: 6/1/99
Revision Dates: 6/17/03

133.4.6 Statewide Winter Road Condition Report

A statewide winter road condition report shall be made available to update the traveler information map on MoDOT's internet web site. Every year between November 1 and March 30, districts shall update the winter road condition report at the beginning of each workday, even if there is not a winter storm. Conditions will be reported as clear, mostly clear, partly covered, covered and closed. During winter weather, even if the storm falls outside of November 1 to March 30, districts shall report changes in road conditions as they occur, or at least every four hours throughout the winter event. Customers will rely on the information they find on the traveler information map, therefore we encourage districts to do updates more often on nights and weekends when roads are icy, snow covered or wet, and freezing may occur. After a storm ends, districts shall continue to report all changes in road conditions a minimum of every four hours until all continuous operations routes have returned to mostly clear conditions. The districts are still expected to update the Traveler Information Map when conditions change from mostly clear to clear, but they may wait until normal working hours to make this change. No overtime will be required to make this change. Districts that are unaffected by a winter storm only need to update information once per workday. The Traveler Information Map, that shows the winter road conditions to the public on the external web site, will show "Clear, Mostly Clear, Partly Covered, Covered and Closed".

Reason for policy: To ensure that the statewide report is correct and up to date, all districts must keep the reporting data current and accurate.

Effective Date: 6/1/99
Revision Dates: 6/17/03, 8/16/07, 11/15/07, 9/01/10

Covered

Covered

Partly Covered

Partly Covered

Near Normal/Mostly Clear

Near Normal/Mostly Clear

Non-Continuous Operations Classification Example - "Suspend Operations"

Non-Continuous Operations Classification Example - "Suspend Operations"

133.4.7 Abandoned Vehicles

During a snow and/or ice storm situation, MoDOT, with district office approval, may immediately remove any abandoned vehicle if it is creating a traffic hazard because of its position in relation to the state highway. Preferably the Missouri State Highway Patrol will take the lead roll in these situations.

> Reasons for policy: RSMo 304.155 (https://revisor.mo.gov/main/OneSection.aspx?section=304.155) Abandoned motor vehicles on public property, and RSMo 229.030 (https://revisor.mo.gov/main/OneSection.aspx?section=229.030) Roads cleared of obstructions
>
> Effective Date: 6/1/99

133.4.8 Winter Event Database

A statewide Winter Event Report Database shall be made available for use by MoDOT Maintenance managers. This database shall be used to report and track information about winter events. Use this database to create a report whenever there are material and/or equipment usage charges related to falling precipitation events such as snow, sleet or freezing rain or non-precipitation events such as frost, black ice or refreeze of melted snow. This includes routine anti-icing efforts prior to an event or for frost control on bridge decks. No report is necessary if you do not have material and/or equipment usage charges.

> Effective Date: 10/14/05

APPENDIX R – EPG 133.5 Operator's Guide for Anti-icing

133.5 Operator's Guide for Anti-Icing

Anti-icing is the snow and ice control practice of preventing the development of a bond between snow and/or ice and the pavement surface with the timely application of salt. Applying the right amount of salt at the right time will make snow removal operations more efficient and produce safer driving conditions during winter storms.

This article provides guidelines for the application of salt to the roadway for a variety of winter storm conditions. The timing and application rates were developed under the SHRP/FHWA Research Program, in which MoDOT participated. Many Maintenance personnel who have tested these procedures have found them to be valuable in their winter maintenance operations. The statewide implementation of this technology will help produce safer driving conditions on MoDOT's continuous operations routes during winter months.

Tables	Printable pdf files
How to Use Liquid Anti-Icers	How to Use Liquid Anti-Icers
Equivalent Salt Spread Rates	Equivalent Salt Spread Rates
Pure salt concentration and corresponding specific gravity (measured by a hydrometer) at 59º F	Pure salt concentration and corresponding specific gravity (measured by a hydrometer) at 59º F
Gradation of salt specified by ASTM D 632 and MoDOT	Gradation of salt specified by ASTM D 632 and MoDOT
Proportions for preparing sodium chloride solution from commercial grade salt (i.e., up to 5 percent impurities)	Proportions for preparing sodium chloride solution from commercial grade salt (i.e., up to 5 percent impurities)
Type 5 Winter Event: Frost, Flurries, Freezing Fog, Blowing Snow and Refreeze	Type 5 Winter Event
Type 4 Winter Event: Dusting to 1 in. of snow, sleet, or other frozen precipitation	Type 4 Winter Event
Type 3 Winter Event: 1 – 6 in. of snow/frozen precipitation in 24 hours OR a trace to 1/2 in. of ice	Type 3 Winter Event
Type 2 Winter Event: 6 – 12 in. of snow in 24 hours OR ½ to ¾ in. of ice	Type 2 Winter Event
Type 1 Winter Event: More than 12 inches of snow in 24 hours OR more than ¾ inch of ice	Type 1 Winter Event

Contents

133.5.1 Operations Guide for Maintenance Field Personnel

This is a guide to highway anti-icing operations for Maintenance field personnel. Its purpose is to recommend maintenance actions for *preventing* the formation or development of packed and bonded snow or bonded ice on the **continuous operations routes** during a variety of winter weather events. It is intended to complement the decision-making and management practices of a systematic anti-icing program so that **continuous operations routes** can be efficiently maintained in the best possible condition.

These guidelines are based on the results of four years of anti-icing field testing conducted by 15 state DOTs, including MoDOT, and is supported by the Strategic Highway Research Program (SHRP) and the Federal Highway Administration (FHWA). Since then, it has been augmented with many additional years of anti-icing experience in different parts of our state.

Guidance for anti-icing operations during five winter weather events is available. The five events are:

- Type 5 Winter Event: Frost, flurries, freezing fog, blowing snow & refreeze
- Type 4 Winter Event: Dusting to 1 in. of snow, sleet or other frozen precipitation
- Type 3 Winter Event: 1 – 6 in. of snow/frozen precipitation in 24 hours OR a trace to ½ in. of ice

- Type 2 Winter Event: 6 – 12 in. of snow in 24 hours OR ½ to ¾ in. of ice
- Type 1 Winter Event: More than 12 in. of snow in 24 hours OR more than ¾ in. of ice

The tables suggest the appropriate maintenance action to take during initial and follow-up anti-icing operations for a given precipitation or icing event. Each action is defined for a range of pavement temperatures and an associated temperature trend. For some events the operation is dependent not only on the pavement temperature and trend, but also upon the pavement surface or the traffic condition at the time of the action. Many of the maintenance actions involve the application of salt in either a dry solid, pre-wetted or brine (liquid) form. Pre-wetted solid and brine are the two primary forms on which we need to concentrate. Application rates are given for each form where appropriate. **These are suggested rates and should be adjusted, if necessary, to achieve the effectiveness for local conditions.**

Related Information

MoDOT Snow Academy Official Guide, Participant's Manual (http://wwwi.dot.missouri/intranet/hr/hred/documents/MoDOTSnowAcademyparticipantbook.pdf) and Snow Academy Website (http://wwwi.dot.missouri/intranet/hr/hred/roadeo.htm)

Comments and notes are given in each table where appropriate to further guide field maintenance personnel for their anti-icing operations.

133.5.2 Glossary

Black ice. Popular term for a very thin coating of clear, bubble-free, homogenous ice which forms on a pavement with a temperature at or slightly above 32° F when the temperature of the air in contact with the ground is below the freezing-point of water and small slightly supercooled water droplets deposit on the surface and coalesce (flow together) before freezing.

Preparing for winter weather in Butler County

Brine. Water saturated with common salt (NaCl), also liquid salt or liquid chemical.

Continuous Operations Routes. This system includes all major highways, minor highways with traffic volumes of 2,500 ADT or greater and other urban and community routes designated by the district in consultation with the Maintenance Division. This also includes all designated incident bypass routes.

These routes will receive plowing and application of snow and ice control treatments on an as needed basis, throughout the storm until all lanes are restored to a near normal condition.

Dew Point. The temperature that a vapor begins to condense.

Freezing rain. Super-cooled droplets of liquid precipitation falling on a surface whose temperature is below or slightly above freezing, resulting in a hard, slick, generally thick coating of ice commonly called glaze or clear ice. Non-super-cooled raindrops falling on a surface whose temperature is well below freezing will also result in glaze.

Frost. Also called hoarfrost. Ice crystals in the form of scales, needles, feathers or fans deposited on surfaces cooled by radiation or by other processes. The deposit may be composed of drops of dew frozen after deposition and of ice formed directly from water vapor at a temperature below 0° C (32° F) (sublimation).

Light Snow. Snow falling at the rate of less than 1/2 in. per hour; visibility is not affected adversely.

Moderate or heavy snow. Snow falling at a rate of 1/2 in. per hour or greater; visibility may be reduced.

Pre-treatment. This is the practice of applying salt brine at 44 gallons per lane mile to dry pavement prior to the winter event, or the application of pre-wetted salt to the surface prior to snow and ice bonding to the pavement.

Pre-wetting. Pre-wetting is the practice of applying salt brine to dry salt before it is placed on the pavement, and should be done at 10 to 15 gallons per ton. Liquid calcium chloride may be used for pre-wetting salt at temperatures below 15° F.

Sleet. A mixture of rain and of snow that has been partially melted by falling through an atmosphere with a temperature slightly above freezing.

Slush. Accumulation of snow that lies on an impervious base and is saturated with water in excess of its freely drained capacity. It will not support any weight when stepped or driven on but will "squish" until the base support is reached.

Spread Rate. The salt application rate in either the solid or liquid form. For solid applications it is simply the weight of the salt applied per lane mile. For liquid applications it is the volume (gallons) of brine applied per lane mile.

133.5.3 Tables

Table 133.5.3.1 How to Use Liquid Anti-Icers

Pounds of Ice Melted per Pound of Salt

Temperature, ° F	One Pound of Salt (sodium chloride)
30	46.3 lbs. of ice
25	14.4 lbs. of ice
20	8.6 lbs. of ice
15	6.3 lbs. of ice
10	4.9 lbs. of ice
5	4.1 lbs. of ice
0	3.7 lbs. of ice

Printable pdf of "Equivalent Salt Spread Rates"

Table 133.5.3.2 Equivalent Salt Spread Rates

Solid or Pre-wetted Solid (lbs./lane-mile)	Salt Brine, 23% Concentration NaCL (gallon/lane-mile)
25	11
50	22
75	33
100	44
125	55
150	65
200	87

Printable pdf of "Pure salt concentration and corresponding specific gravity (measured by a hydrometer) at 59º F"

Table 133.5.3.3 Pure salt concentration and corresponding specific gravity (measured by a hydrometer) at 59º F

Percent salt	Specific gravity at 59º F	Percent of saturation	Weight [1] of salt, lb/gal
0	1.000	0	0
5	1.035	20	0.43
6	1.043	24	0.52
7	1.050	28	0.61
8	1.057	32	0.71
9	1.065	36	0.80
10	1.072	40	0.90
11	1.080	44	0.99
12	1.087	48	1.00
13	1.095	52	1.10
14	1.103	56	1.29
15	1.111	60	1.39
16	1.118	63	1.49
17	1.126	67	1.60
18	1.134	71	1.71
19	1.142	75	1.81
20	1.150	79	1.92
21	1.158	83	2.03
22	1.166	87	2.14
23	1.175	91	2.26
24	1.183	95	2.37
25	1.191	99	2.45
25.2	1.200	100	
[1]Note: Weight of commercial salt required = (weight of pure NaCl from table) ÷ (purity in percent)			

Printable pdf of "Gradation of salt specified by ASTM D 632 and MoDOT"

Table 133.5.3.4 Gradation of salt specified by ASTM D 632 & MoDOT

Sieve size	Weight % passing		
	ASTM Gr. 1	ASTM Gr. 2	MoDOT
3/4 in.	-	100	-
1/2 in.	100	-	100
3/8 in.	95-100	-	95-100
No. 4	20-90	29-100	15-95
No. 8	10-60	10-60	5-65
No. 30	0-15	0-15	0-15
Note: ASTM Gr. 1 is the most commonly used gradation in the U.S.			

Printable pdf of "Proportions for preparing sodium chloride solution from commercial grade salt"

Table 133.5.3.5 Proportions for preparing sodium chloride solution from commercial grade salt (i.e., up to 5 percent impurities)

Actual %NaCl	Weight NaCl		Crystalization temperature, ° F	Weight per unit volume of solution, lb/gal
	per volume solution, lb/gal	per volume water, lb/gal		
10	0.9	0.8	20	8.95
15	1.4	1.3	12	9.28
20	1.9	1.7	0	9.6
23[1]	2.3	1.9	-6	9.76
25	2.5	2.1	-16	10.3
[1] Note: This is the approximate eutectic composition, i.e., the composition that results in the lowest temperature at which a solution can exist while remaining completely liquid.				

133.5.3.6 Tables for Continuous Operations Routes

Printable file for "Type 5 Winter Event"

Table 133.5.3.6.1 Type 5 Winter Event: Frost, Flurries, Freezing Fog, Blowing Snow and Refreeze

Continuous Operations Routes

Pavement Temperature Range and Trend	Traffic Condition	Initial Operation			Subsequent Operations			Comments
		Maintenance Action	Spread Rates		Maintenance Action	Spread Rates		
			Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)		Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)	
Above 32º F, steady or rising	Any level	None, see comments	-	-	None, see comments	-	-	**1)** Monitor pavement temperature closely; begin treatment if starts to fall to 32ºF and below and is at or below dew point.
28º F to 32º F, remaining in range or falling to 32º F or below, *and* equal to or below dew point	Traffic rate less than 100 vehicles per hr	Apply brine or pre-wetted solid salt	25-65	11-28	Reapply pre-wetted solid salt as needed	25-65	-	**1)** Monitor pavement closely; if pavement becomes wet or if thin ice forms, reapply salt at higher indicated rate. **2)** Do not apply brine on ice so thick that the pavement cannot be seen.
	Traffic rate greater than 100 vehicles per hr	Apply brine or pre-wetted solid salt	25-65	11-28	Reapply brine pre-wetted solid salt as needed	25-65	11-28	
20º to 28º F, remaining in range *and* equal to or below dew point	Any level	Apply brine or pre-wetted solid salt	65-130	28-57	Reapply brine pre-wetted solid salt as needed	65-130	28-57	**1)** Monitor pavement closely; if thin ice forms, reapply salt at higher indicated rate. **2)** Applications will need to be more frequent at higher levels of condensation; if traffic volumes are not enough to disperse condensation, it may be necessary to increase frequency. **3)** It is not advisable to apply a brine at the indicated spread rate when the pavement temperature drops below 20ºF.
10º to 20º F, remaining in range *and* equal to or below dew point	Any level	Apply pre-wetted solid salt	130-200	-	Reapply pre-wetted solid salt as needed	130-200	-	**1)** Monitor pavement closely; if thin ice forms, reapply salt at higher indicated rate. **2)** Applications will need to be more frequent at higher levels of condensation; if traffic volumes are not enough to disperse condensation, it may be necessary to increase frequency.
Below 0º F, steady or falling	Any level	Apply abrasives	-	-	Apply abrasives as needed	-	-	**1)** Monitor pavement closely, salt will have limited melting power in this temperature range. **2)** Liquid calcium chloride may be used for pre-wetting salt/abrasive mix at colder temperatures.
Notes: **TIMING. 1)** Conduct initial operation in advance of freezing. Apply brine up to 3 hr in advance. Use longer advance times in this range to effect drying when traffic volume is low. Apply pre-wetted solid salt 1 to 2 hr in advance. **2)** In the absence of precipitation, brine at 33 gal/lane-mi has been successful in preventing bridge deck icing when placed up to 4 days before freezing on higher volume roads and 7 days before on lower volume roads.								

Table 133.5.3.6.2 Type 4 Winter Event: Dusting to 1 in. of snow, sleet, or other frozen precipitation

Printable file for "Type 4 Winter Event"

Continuous Operations Routes

Pavement Temperature Range and Trend	Initial Operation				Subsequent Operations			Comments
	Pavement surface at time of initial operation	Maintenance action	Salt spread rates		Maintenance action	Salt spread rates		
			Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)		Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)	
Above 32º F, steady or rising	Dry, wet, slush or light snow cover	None, see comments	-	-	None, see comments	-	-	**1)** Monitor pavement temperature closely for drops toward 32º F and below. **2)** Treat icy patches if needed with pre-wetted solid salt at 100 lb/lane-mile; plow if needed.
Above 32º F, 32º F or below is imminent; *ALSO* **15º to 32º F,** remaining in range	Dry	Apply brine or pre-wetted salt	100	44	Plow as needed, reapply liquid or solid chemical when needed	100	44	**1)** Applications will need to be more frequent at lower temperatures and higher snowfall rates **2)** It is not advisable to apply a straight brine at the indicated spread rate when the pavement temperature drops below 20ºF **3)** Do not apply brine onto heavy snow accumulation or packed snow
	Wet, slush, or light snow cover	Apply liquid or solid salt	100	44				
0º to 15º F, remaining in range	Dry, wet, slush or light snow cover	Apply pre-wetted solid chemical	200	-	Plow as needed, reapply pre-wetted solid chemical when needed	200	-	**1)** Abrasives may be added to the salt to enhance traction at colder temperatures **2)** Liquid calcium chloride may be used for pre-wetting solid salt at colder temperatures
Below 0º F, steady or falling	Dry or light snow cover	Plow as needed	-	-	Plow and apply salt/abrasive mix as needed	-	-	**1)** 1 If pavement becomes slick apply salt/abrasive mix to enhance traction. Salt will have limited melting power in this temperature range. **2)** Pre-wet salt/abrasive mix with liquid calcium chloride.
Notes: **SALT APPLICATIONS. 1)** Time initial and subsequent chemical applications to prevent deteriorating conditions or development of packed and bonded snow. **2)** Apply salt ahead of traffic rush periods occurring during storm. **PLOWING.** If needed, ***plow before salt applications*** so that excess snow, slush, or ice is removed and pavement is wet, slushy, or lightly snow covered when treated.								

Table 133.5.3.6.3 Type 3 Winter Event: 1 – 6 in. of snow/frozen precipitation in 24 hours OR a trace to 1/2 in. of ice

Printable file for "Type 3 Winter Event"

Continuous Operations Routes

Pavement Temperature Range and Trend	Initial Operation				Subsequent Operations					Comments
	Pavement surface at time of initial operation	Maintenance action	Salt spread rates		Maintenance action	Salt spread rates				
			Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)		Pre-wetted solid salt (lb/lane-mile)		Brine (gal/lane-mile)		
						Light snow	Heavier snow	Light snow	Heavier snow	
Above 32º F, steady or rising	Dry, wet, slush or light snow cover	None, see comments	-	-	None, see comments	-	-	-	-	**1)** Monitor pavement temperature closely for drops toward 32º F and below. **2)** Treat slick patches if needed with pre-wetted salt at 100 lb/lane-mile or brine 44 gal/lane-mile; plow if needed.
Above 32º F, 32º F or below is imminent; *ALSO* **20º to 32º F,** remaining in range	Dry	Apply brine or pre-wetted salt	100	44	Plow as needed, reapply brine or pre-wetted solid salt when needed	100	200	44	88	**1)** Applications will need to be more frequent at lower temperatures and higher snowfall rates. **2)** Do not apply brine onto heavy snow accumulation or packed snow. **3)** After heavier snow periods and during light snowfall, reduce salt rate to 100 lb./lane-mile or 44 gal./lane-mile brine; continue to plow and apply salt as needed
	Wet, slush, or light snow cover	Apply brine or pre-wetted salt	100	44						
10º to 20º F, remaining in range	Dry, wet, slush or light snow cover	Apply pre-wetted salt	200	-	Plow as needed, reapply pre-wetted solid salt when needed	200	250	-	-	**1)** Reduce salt rate to 200 lb./lane-mile after heavier snow periods and during light snowfall; continue to plow and apply salt as needed. **2)** Liquid calcium chloride may be used for pre-wetted salt at colder temperatures
Below 10º F, steady or falling	Dry or light snow cover	Plow as needed	-	-	Plow and apply salt/abrasive mix as needed	-	-	-	-	As pavement becomes slick, apply salt/abrasive mix to enhance traction. Salt will have limited melting power at these temperatures.
Notes: **SALT APPLICATIONS. 1)** Time initial and subsequent chemical applications to *prevent* deteriorating conditions or development of packed and bonded snow. **2) Anticipate increases in snowfall intensity. Apply higher rate treatments prior to or at the beginning of heavier snowfall periods to prevent development of packed and bonded snow. 3)** Apply salt ahead of traffic rush periods occurring during storm. **PLOWING.** If needed, *plow before salt applications* so that excess snow, slush or ice is removed and pavement is wet, slushy or lightly snow-covered when treated.										

Table 133.5.3.6.4 Type 2 Winter Event: 6 – 12 in. of snow in 24 hours OR ½ to ¾ in. of ice

Printable file for "Type 2 Winter Event"

Continuous Operations Routes

Pavement Temperature Range and Trend	Initial Operation				Subsequent Operations			Comments
	Pavement surface at time of initial operation	Maintenance action	Salt spread rates		Maintenance action	Salt spread rates		
			Pre-wetted solid salt (lb/lane-mail)	Brine (gal/lane-mile)		Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)	
Above 32º F, steady or rising	Dry, wet, slush or light snow cover	None, see comments	-	-	None, see comments	-	-	**1)** Monitor pavement temperature closely for drops toward 32º F and below. **2)** Treat slick patches if needed with pre-wetted solid salt at 100 lb/lane-mile or with brine at 44 gal/lane-mile; plow if needed.
Above 32º F, 32º F or below is imminent; *ALSO* **30º to 32º F,** remaining in range	Dry	Apply brine or pre-wetted solid salt	100	44	Plow accumulation and reapply brine or solid salt as needed	100	44	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 200 lb/lane-mile to accommodate longer operational cycles. **2)** Do not apply brine onto heavy snow accumulation or packed snow.
	Wet, slush or light snow cover	Apply brine or pre-wetted solid salt	100	44				
20º to 30º F, remaining in range	Dry	Apply brine or pre-wetted solid salt	150-200	65-87	Plow accumulation and reapply brine or solid salt as needed	200	87	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 400 lb/lane-mile to accommodate longer operational cycles. **2)** Do not apply brine onto heavy snow accumulation or packed snow.
	Wet, slush or light snow cover	Apply brine or pre-wetted solid salt	150-200	65-87				
10º to 20º F, remaining in range	Dry, wet, slush or light snow cover	Apply pre-wetted solid salt	200	-	Plow accumulation and reapply brine or solid salt as needed	250	-	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 500 lb/lane-mile to accommodate longer operational cycles. **2)** Liquid calcium chloride may be used for pre-wetting salt at colder temperatures.
Below 10º F, steady or falling	Dry or light snow cover	Plow as needed	-	-	Plow accumulation as needed	250	-	As pavement becomes slick, apply salt/abrasive mix to enhance traction. Salt will have limited melting power in this temperature range.

Notes. **SALT APPLICATIONS. 1)** Time initial and subsequent salt applications to *prevent* deteriorating conditions or development of packed and bonded snow – ***timing and frequency of applications will be determined primarily by plowing requirements.*** **2)** Apply salt ahead of traffic rush periods occurring during storm.

PLOWING. *Plow before chemical applications* so that excess snow, slush or ice is removed and pavement is wet, slushy, or lightly snow-covered when treated.

Table 133.5.3.6.5 Type 1 Winter Event: More than 12 inches of snow in 24 hours OR more than ¾ inch of ice

Printable file for "Type 1 Winter Event"

Continuous Operations Routes

Pavement Temperature Range and Trend	Initial Operation				Subsequent Operations			Comments
	Pavement surface at time of initial operation	Maintenance action	Salt spread rates		Maintenance action	Salt spread rates		
			Pre-wetted solid salt (lb/lane-mail)	Brine (gal/lane-mile)		Pre-wetted solid salt (lb/lane-mile)	Brine (gal/lane-mile)	
Above 32º F, steady or rising	Dry, wet slush or light snow cover	None, see comments	-	-	None, see comments	-	-	**1)** Monitor pavement temperature closely for drops toward 32º F and below **2)** Treat slick patches if needed with pre-wetted salt at 100 lb/lane-mi or with brine at 44 gal/ln-mi; plow if needed.
Above 32º F, 32º F or below is imminent; *ALSO* **30º to 32º F,** remaining in range	Dry	Apply brine or pre-wetted solid salt	100	44	Plow accumulation and reapply brine or solid salt as needed	100	44	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 200 lb/lane-mi to accommodate longer operational cycles. **2)** Do not apply brine onto heavy snow accumulation or packed snow.
	Wet, slush, or light snow cover	Apply brine or pre-wetted solid salt	100	44				
20º to 30º F, remaining in range	Dry	Apply brine or pre-wetted solid salt	150-200	65-87	Plow accumulation and reapply brine or solid salt as needed	200	87	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 400 lb/lane-mi to accommodate longer operational cycles. **2)** Do not apply brine onto heavy snow accumulation or packed snow.
	Wet, slush, or light snow cover	Apply brine or pre-wetted solid salt	150-200	65-87				
10º to 20º F, remaining in range	Dry, wet, slush, or light snow cover	Apply pre-wetted solid salt	200	-	Plow accumulation and reapply brine or solid salt as needed	250	-	**1)** If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 500 lb/lane-mi to accommodate longer operational cycles. **2)** Liquid calcium chloride may be used for pre-wetting salt at colder temperatures
Below 10º F, steady or falling	Dry or light snow cover	Plow as needed	-	-	Plow accumulation as needed	250	-	As pavement becomes slick apply salt/abrasive mix to enhance traction. Salt will have limited melting power in this temperature range.

Notes: **SALT APPLICATIONS. 1)** Time initial and subsequent salt applications to prevent deteriorating conditions or development of packed and bonded snow--***timing and frequency of subsequent applications will be determined primarily by plowing requirements.*** **2)** Apply salt ahead of traffic rush periods occurring during storm.

PLOWING. *Plow before chemical applications* so that excess snow, slush or ice is removed and pavement is wet, slushy or lightly snow covered when treated.

APPENDIX S – Hazardous Material Response Plan

ANNEX C

HAZARDOUS MATERIALS

RESPONSE PLAN

The following MoDOT policies relate to this plan:

Hazard Communication Training Policy

And

Hazard Spills Training Policy

TABLE OF CONTENTS

HAZARDOUS MATERIALS PROCEDURES

These procedures are intended for Haz-Mat Responders or Regional Maintenance Supervisors. The procedures are as follows:

1. A hazardous materials spill is considered an emergency situation. Remember to approach the scene cautiously.

2. Secure the scene, if it is not already. Use your eyes and the *Emergency Response Guidebook*[1] to attempt to identify the hazards. Stay upwind of the vehicle, containers or spill and do not walk into, touch or inhale any spilled material.

3. Contact the appropriate local authorities: fire, police, ambulance, etc.

4. Remember, MoDOT is not in the business of cleaning up hazardous spills. If the spill is close to a stream or waterway, and you can positively identify the spilled material, and it can be done without jeopardizing anyone, build a dike or dam to contain the spilled material. Use the *National Institute of Occupational Safety and Health (NIOSH) Pocket Guide*[2] and the Emergency Response Guidebook to identify the specific chemical hazards if possible.

5. Contact your district Hazardous Material Coordinator, who will in turn contact the MO Department of Natural Resources' Environmental Emergency Response Unit **(MDNR) 24-hour emergency hotline (573) 634-2436**. Have information regarding the spill ready such as the location, company, material, amount, etc.

6. **Cleanup is the responsibility of the owner/operator** of the transportation unit. If the driver is injured or unable to contact a cleanup company, contact MDNR with the information and they will contact a cleanup company.

7. If the material spilled is petroleum and **less than 50 gallons**, the owner/operator may not have to perform cleanup.. As a courtesy, MoDOT may contact MDNR and notify them of the spill. If the spill threatens a waterway, MDNR must be called.

8. If the material spilled is petroleum and **over 50 gallons**, it is mandatory that the owner/operator of the transportation unit contact MDNR and also inform the owner/operator that we expect them to clean up the spill in accordance with state and federal regulations. MoDOT should contact MDNR as a courtesy and ensure the owner/operator has made contact.

MDNR has a list of available cleanup companies. If the transportation unit needs to contact a cleanup company, they should call MDNR for a list.

9. Keep the District Hazardous Materials Coordinator, or their back up, informed of the situation. They will inform the districts assigned or an available Environmental Specialist and/or Environmental Compliance Manager in Design-Environmental Section and Central Office Risk and Benefits Management.

[1] Location: Public Internet-(https://phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/erg2016.pdf)
Who maintains this document: Pipeline and Hazardous Materials Safety Administration
[2] Location: Public Internet (http://www.cdc.gov/niosh/npg/)
Who maintains this document: National Institute of Occupational Safety and Health (NIOSH)

Hazardous Material Reporting Procedures

A. Introduction

MoDOT has the responsibility of maintaining a safe and usable highway system. MoDOT employees, however, have not been trained in non-department hazardous waste identification, investigation, and/or removal. It is MoDOT's policy to take all reasonable precautions to protect both its employees and the public from being exposed to unidentifiable materials or to identify materials that may be dangerous to health, safety, or the environment. For these reasons, the following emergency procedures emphasize rapid communications with the MDNR and other emergency service agencies.

B. Definition of Hazardous Substance Release Emergency

A release of a hazardous or suspected hazardous material or waste non-owned by the department that requires initiation of the Emergency Communications Procedures *(Section C below)* is one or more or the following incidents:

- Spill of an unidentified material on highway right of way (ROW);
- Spill of an identified hazardous material or waste on ROW.
- Abandoned containers of unidentified materials on ROW.
- Abandoned containers of identified hazardous material or waste on ROW.

C. Hazardous Materials Reporting Guidance

Any MoDOT employee who discovers a hazardous material release shall immediately notify the Hazardous Materials Coordinator[1] (HMC) in the district. Without risking exposure to the substance, the discoverer shall secure the site to keep unnecessary people away and then provide all available information about the risk to the HMC for relay to the MDNR. Include the following:

- Location including nearest waterway
- Estimated quantity of spill
- Type of materials
- Phone number or radio call number where the discoverer can be contacted
- Written notes of activity, time of occurrences, and names of those involved
- Responsible party (spiller) information and contact if known

[1] Location: SharePoint- (http://sharepoint/sites/DE/environmental_historic_pres/Shared Documents/Env and HP Contact Maps/ENV_Haz_Waste_Contacts.pdf)
Who maintains this document: Design Division

The discoverer shall remain at the site at a safe distance on a standby basis to provide communications until relieved by the HMC or his/her designee. The discoverer and/or the HMC shall be prepared to respond to requests from DNR, local authorities, etc., for additional information.
When the HMC has been informed, the following steps are to be followed:

1. HMC will call the MDNR 24-hour hotline number (573) 634-2436.

2. MDNR will advise the HMC of cleanup instructions, if any.

3. HMC will inform the field personnel of any necessary actions.

4. HMC will call the assigned Environmental Compliance Coordinators.

D. Emergency Procedures for Internal Spills and Releases.

Follow Spill Prevention and Control Countermeasures (SPCC) Plan requirements for storage and training of all MoDOT hazardous materials and petroleum products. To ensure worker safety in the event of a spill or other unplanned release of a hazardous material or waste, the following steps are to be taken by MoDOT employees:

1. Do not walk into, touch, taste, or inhale the spilled material or disturb hazardous material containers. Stay upwind and upgrade of any spilled material, fumes or dust.

2. Eliminate all ignition sources (flares, operating engines, smoking, and electrical sparks).

3. Stay clear of any tanks that may potentially rupture.

4. Be aware of potential gas or vapor hazards.

5. Avoid confined spaces near the spill or release.

6. Secure the area.

E. Response to Release Emergencies on Right Of Way Resulting From Non-department Operations

MoDOT may contain but should not clean up hazardous substance releases caused by private carriers on highway right of way. Any MoDOT employee that discovers a release on the ROW shall follow this procedure:

1. Immediately initiate the Hazardous Materials Reporting Procedures. *(Section C above).*

2. Remain on site if safe to do so,, to give information to the HMC, MDNR, and the local authorities until relieved by MDNR or the HMC.

3. After the incident scene is cleared of traffic and bystanders, if the substance is positively identified, MoDOT employees may attempt to contain the spill to prevent further contamination.

MoDOT employees shall not participate in the cleanup and handling of hazardous materials and wastes owned by a private business, unless directed to do so by the HMC.

F.

* Duties of the HMC:

1. HMC will call the DNR 24-hour hotline number (573) 634-2436.

2. HMC will inform field personnel of any necessary actions.

3. HMC will call the assigned Sr. Environmental Specialist/ Environmental Compliance Manager if the situation warrants.

FOR ADDITIONAL INFORMATION, CONTACT THE DISTRICT HAZARDOUS MATERIAL COORDINATOR (HMC).

DISTRICT OFFICES

NW District - St. Joseph .....(816) 387-2350
NE District - Hannibal .....(573) 248-2490
KC District - Kansas City .....(816) 607-2000
Central District - Jefferson City .....(573) 751-3322
SL District - Chesterfield.....(314) 275-1500
SW District - Springfield .....(417) 895-7600
SE District - Sikeston.....(573) 472-5333
Central Office.....(573) 526-6684

HIGHWAY PATROL

General Headquarters.....(573) 751-3313
Troop A.....(816) 622-0800
Troop B .....(816) 660-2123
Troop C .....(314) 340-4000
Troop D.....(417) 895-6868
Troop E .....(573) 840-9500
Troop F.....(573) 751-1000
Troop G.....(417) 469-3121
Troop H.....(816) 387-2345
Troop I .....(573) 368-2345

MoDOT'S Hazard Communication Plan[1]

I. PURPOSE

MoDOT includes some operations that use chemical substances that can be harmful, unless precautions are taken. This written Hazard Communication Plan is intended to serve as a guideline for all Districts and Central Office in developing an adequate means of informing and protecting employees. Its goal is to ensure protection of all employees involved in the handling and use of hazardous chemicals.

The effectiveness of this program depends upon the sincere support and cooperation of all those involved.

II. POLICY STATEMENT

All MoDOT employees exposed to hazardous chemicals shall be trained as outlined in this Hazard Communication Plan. It shall be the policy of MoDOT to maintain awareness of all hazardous chemicals encountered by its employees and to communicate any associated hazards along with the necessary safety precautions.

III. PRINCIPAL REQUIREMENTS OF THE HAZARD COMMUNICATION STANDARD

A. Ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the identity of the chemical and appropriate hazard warning. Gas cans used for other substances must be properly labeled as such.

B. Maintain copies of Material Safety Data Sheets (MSDSs) for each hazardous chemical in the workplace, and ensure that the MSDSs are readily accessible to employees.

C. Provide employees with specific information regarding hazardous chemicals in their work areas at the time of their initial assignment, and whenever a new hazard is introduced into their work area. Employees must be informed of any operations in their work area where hazardous chemicals are present, and the location and ability of the written hazard communication plan and the MSDSs.

D. Provide employees with training regarding hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area. This training must include at least:

- Methods and observations that may be used to detect the presence of a chemical in the work area.
- The physical and health hazards of the chemicals in the work area.
- The measures employees can take to protect themselves from those hazards.

[1] Location: SharePoint- (http://sharepoint/safety/csp/Shared Documents/Policies/Hazardous Communication.pdf)
Who maintains this document: Risk & Benefits Management Division

- The details of the hazard communication plan, including an explanation of the MSDSs, the labeling system, and the methods for employees to obtain and use the appropriate hazards information.

IV. MATERIAL SAFETY DATA SHEETS[1] (MSDS)

A. *Obtaining MSDSs:*

A Material Safety Data Sheet is required for each hazardous chemical on the building inventory. Chemical manufacturers and suppliers are required to provide a MSDS for each chemical provided to a customer. The storeroom will provide MSDSs for all chemicals that they provide. For other products received directly from manufacturers or districts, MSDSs should be provided by the manufacturer or distributor.

B. *Maintaining MSDSs:*

MSDSs, a copy of the written Hazard Communication Plan, and a list of hazardous chemicals in the workplace are to be maintained in a file, folder or notebook at each permanent workplace, at a location convenient and readily accessible to all employees during all work hours.

C. *Updating MSDSs:*

Supervisors or their designees shall review incoming MSDS, and copies of updated MSDSs shall be forwarded to affected buildings. If the MSDS has not been revised, the MSDS may be discarded. If the MSDS has been reviewed, the new MSDS must be placed in the file and the old MSDS removed. The date of removal shall be written on the old MSDS and it shall be placed in a file labeled Old Material Safety Data Sheets.

V. CONTAINER LABELING

A. *Incoming Containers:*

Under the standard, chemical manufactures and suppliers are responsible for labeling containers of hazardous chemicals. It is the responsibility of the supervisor, or designee, in each building, to ensure that each container arriving at the building is labeled or marked legibly with the following information:

- Identify (can be any chemical or common name for the agent as long as the term used is the same shown in the Department's list of hazardous chemicals and the MSDSs.)

- Appropriate hazard warnings.

- Name and address of the chemical manufacturer, supplier, or other responsible party.

B. ***Workplace Containers:***

Hazardous chemicals, which are dispensed from the original shipping container, must be dispensed into appropriate containers with the chemical identity and the hazard warning affixed. Any further dispensing must be into similarly labeled containers ultimately to the point of final use.

Exceptions:

- Chemicals to be used exclusively by one employee during one work shift may be transferred to and used from unlabeled containers.

- Laboratory chemicals dispensed from a properly labeled incoming container need to be identified by name only when dispensing for use in the laboratory.

C. ***Updating of Labels:***

If MoDOT is notified of significant hazard characteristic changes on an updated MSDS, the supervisor, or designee, responsible for container labeling, shall see that any outdated hazard warnings on labels are corrected and the updated information conveyed.

VI. NON-ROUTINE TASKS

A. Circumstances may require employees to perform tasks that involve potential exposure to hazardous chemicals that are not in the course of the regular job.

Prior to these tasks, employees must be notified regarding:

- The nature of any hazardous chemicals present. Material Safety Data Sheets for those chemicals should be reviewed in detail and all recommendations followed in preparing for the task.

- Precautionary measures and personal protective equipment needed for the task.

- Any hazards associated with chemicals present in unlabeled pipes.

VII. NON-DEPARTMENTAL PERSONNEL (Contractors, etc.)

A. Mutual conveyance of chemical hazard information is necessary between MoDOT and outside contractors and service personnel:

- MoDOT must be informed of all hazardous substances to be brought into the workplace by contractors and/or service personnel.

- Contractors and/or service personnel must be informed of all hazardous substances they may encounter during their activities in a MoDOT workplace.

B. It is the responsibility of MoDOT to inform its employees and provide any necessary training to deal with chemical hazards brought into the workplace. Likewise, it is a

responsibility of MoDOT to provide contractors and/or service personnel adequate information on chemical hazards within the workplace, so that contractors may inform and provide their employees with any necessary training.

In dealing with contractors, the following information shall be exchanged:

- A list of hazardous chemicals, which they may be exposed to while on the job site.
- Precautions that employees may take to lessen the possibility of exposure.
- The location of Material Safety Data Sheets (which must be immediately available).

VIII. EMPLOYEE TRAINING

A. All MoDOT employees are required to receive initial Hazard Communication training. Employees who are or may be exposed to hazardous chemicals in the workplace shall receive additional training on chemical hazards (not necessarily each chemical). New employees shall be trained as soon as possible after hiring and before they are assigned to work with hazardous chemicals.

B. Initial Hazard Communication training shall consist of a brief discussion of all sections of this Hazard Communication Plan and viewing of a Hazard Communication Video.

C. Additional training shall be conducted by supervisors on specific chemical hazards in each workplace and when a new hazard, not necessarily a new chemical, is introduced into the work area.

D. Documented records of training shall be maintained.

E. Follow-up shall be conducted by supervisors to insure that:

- Affected employees remain aware of the Hazard Communication Standard and its requirements
- Employees can show where the Material Safety Data Sheets are located
- Employees are generally familiar with the hazardous properties of the chemicals in their work area and the protective measures being implemented

Additional training is Hazardous Material Identification is available for all employees that work or travel the highways. This training consists of a four-hour class to aid employees in recognizing a hazardous material and what response needs to be taken. Contact Design-Environmental Section in Central Office for additional information.

APPENDIX T – No Additional Controls ARAP

From: Abbott, Michael
To: Melissa Scheperle
Subject: MoDOT, TMDL and part C.8 of MO0137910
Date: Tuesday, December 13, 2016 12:02:02 PM
Attachments: image001.png

Melissa:

On December 6, 2016, the Missouri Department of Natural Resources (DNR) was informed that the Missouri Department of Transportation (MoDOT) would like to begin the process of providing a demonstration that no additional controls are needed beyond the implementation of the six Minimum Control Measures (MCMs) for the four Total Maximum Daily Loads (TMDLs) that MoDOT is named with a Waste Load Allocation.

In accordance with Part C.8 of your permit, MO0137910, DNR is requiring that MoDOT submit an official letter demonstrating how existing Best Management Practices (BMPs) and Measurable Goals are currently meeting the assumptions and requirements for each of the TMDLs. Specifically, please provide a detailed description addressing each of the items listed below:

1. How existing BMPs and measurable goals are currently being implemented to reduce bacteria for each MCM?
2. Any data or other information supporting that BMPs are reducing bacteria (e. coli).
3. Any data documenting existing BMPs reduce bacteria (either directly or indirectly).
4. What considerations will MoDOT take with new or modified BMPs and measurable goals due to the Iterative Process with respect to bacteria removal?
5. Schedule with deadline on when MoDOT's SWMP will be revised to include how existing BMPs and measurable goals are reducing the TMDL's pollutant of concern (e. coli). If the revision of the SWMP is scheduled to take over one year, then MoDOT will also need to describe how they will submit a progress report of the SWMP's revision in their annual report.
6. How current practices, structural BMPs, and other activities are consistent with the implementation actions described in the applicable TMDL Implementation Plans.

Please provide a date when MoDOT believes they will provide a response to the above 6 items (this can be via email). If you would like to have a meeting regarding this topic, please feel free to contact me and we will get one set up. Thanks Melissa and have a good day.

Michael Abbott, Environmental Scientist
Municipal Separate Storm Sewer Systems (MS4) Program Coordinator
Stormwater and Certification Unit
Water Protection Program
Phone: (573) 526-1139

Promoting, Protecting, and Enjoying our Natural Resources. Learn more at dnr.mo.gov.

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

January 25, 2017

Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102

Attn: Michael Abbott

Dear Mr. Abbott, Michael

Subject: **Permit No. MO0137910**
Part C.8

On December 6, 2016, the Missouri Department of Transportation (MoDOT) began the process to demonstrate to the Missouri Department of Natural Resources how existing Best Management Practices (BMPs) and Measurable Goals meet the assumptions and requirements for each of the streams designated with Total Maximum Daily Loads (TMDLs), and why a specific attainment plan for each is not necessary. The following are answers to the questions asked of MoDOT in your email dated December 13, 2016. Please review the answers and let us know if MoDOT needs to take any further action.

1. How are existing BMPs and measurable goals currently being implemented to reduce bacteria for each MCM?

Under **Minimum Control Measure (MCM) 1, MoDOT Community & Public Education and Outreach on Stormwater Impacts Program,** of MoDOT's TS4 permit, MoDOT is actively educating the MoDOT community and the general public it interacts with about bacteria in stormwater runoff and how everyone can help improve water quality. MoDOT achieves this through various media outlets, targeting pet owners and households in general, about proper management of pet waste. MoDOT speaks with the public at the State Fair, Earth Day events and MoDOT public meetings. The State Fair and Earth Day are annual events, whereas public meetings within the TS4 area are varied in frequency.

Public education activities that include messages related to the proper disposal of pet waste are contained in the Stormwater Brochure, which is available to the public through the internet and at public meetings, as well as through the use of the Bean Bag Toss Stormwater Game. The Bean Bag Toss Game targets behaviors, including pet waste disposal, and is mainly used during Earth Day and the State Fair.

Additionally, MoDOT uses Pet Waste and No More Trash signage at Welcome Centers, rest areas, roadside parks, truck parking areas, commuter lots and other targeted areas where appropriate. This further reinforces the message to the traveling public about the importance of pet waste management and litter prevention.

MoDOT also regularly coordinates with other MS4 communities (considered MoDOT's public) on many topics under the MS4 permit and will continue to work together in these watersheds on common issues.

Under the **MCM 2, MoDOT Community and Public Involvement Participation Program,** MoDOT continues to respond to and investigate all reports of suspected illicit discharges and improper disposal of waste through MoDOT's stormwater reporting tool and from maintenance personnel when performing other work on the MoDOT system.

The stormwater reporting tool is located on the stormwater webpage, the road concern tool, as well as being listed in the stormwater brochure. MoDOT will continue to investigate and report verified illicit discharges to the appropriate authorities immediately. Maintenance Division as well as other MoDOT personnel are trained to identify and report any suspected illicit discharges to MoDOT's stormwater specialist. Most reports are not bacteria related, but some instances of improper discharge of onsite wastewater systems or CAFOs have been reported and confirmed. Wastewater discharges are reported to the local county health departments and other discharges are reported to the Missouri Department of Natural Resources (MDNR).

Again, MoDOT coordinates with other MS4 communities (considered part of MoDOT's public) on many topics within the MS4/TS4 permit.

Under the **MCM 3, Illicit Discharge Detection and Elimination (IDDE) Program,** of MoDOT's TS4 permit, MoDOT has a large group of personnel that are on the ground daily performing routine activities. These employees are trained annually to identify and report illicit discharges on MoDOT's system. They also conduct dry weather screening of outfalls during normal operations. MoDOT has mapped its outfalls and regularly inspects bridge outfalls every 2-3 years during normal bridge inspections for pollutants including potential bacterial sources. MoDOT coordinates with local municipalities to remedy many of these situations.

Additionally, MoDOT will continue to enforce existing policies that exclude industrial and domestic waste waters on right of way (EPG 127.25.8.3.1) and system attachments by others (EPG 127.25.8.3.2).

Under **MCM 4, Construction Site Stormwater Runoff Control,** MoDOT will continue to work to reduce bacteria in stormwater by maintaining Job Special Provisions (JSPs) for projects such as paving, grinding, and dewatering, to prevent pollutants in the soil and runoff from entering adjacent waterways. MoDOT also actively works to mitigate erosion from landslides and other eroded areas to prevent sediment from entering drainages, thereby limiting the transport of bacteria in sediment.

MoDOT has pre-construction and pre-activity meetings with contractors and sub-contractors regarding erosion and sediment control prior to initiating work on projects in the Statewide Transportation Improvement Plan (STIP). Erosion and sediment control BMPs are used to keep any sediment that might contain bacteria from reaching adjacent waterways.

Under **MCM 5, Post-Construction Stormwater Management in New Development and Redevelopment,** MoDOT requires consideration of permanent post-construction best management practices (BMPs) when new or redevelopment projects occur in the TS4 coverage area. See MoDOT's EPG for definitions of new and redevelopment. MoDOT also requires local public agency (LPA) projects to comply with this policy if the project is on MoDOT right of way and within a regulated MS4 community (EPG 136). Again, this reduces sediments that could carry bacteria.

Under **MCM 6, Pollution Prevention and Good Housekeeping,** MoDOT requires that maintenance personnel are trained in illicit discharge recognition and reporting at least every other year with a refresher course in the off year. This includes looking for sewage and waste discharged onto right of way. MoDOT is also creating a training program specifically targeting this MCM for staff. It will be available this spring. MoDOT maintenance sheds are also equipped with animal incinerators in urban areas to dispose of road kill thereby removing this bacteria source from the roadway. Street sweeping is also used in municipalities and on MoDOT lots to reduce sediment, salt, bacteria and other constituents from entering the drainage system. Sweepings are considered a solid waste and are disposed of accordingly. Sweeping or brooming to remove dirt and debris from bridges is also required to prevent entry into waters of the state.

2. Any data or other information supporting that BMPs are reducing bacteria (e. coli).

MoDOT is not currently conducting water quality testing to determine if structural or non-structural BMPs are reducing bacteria. It is assumed that if MoDOT is removing dead animals from the roadway and incinerating them, there is a reduction in bacteria in our system.

3. Any data documenting existing BMPs reduce bacteria (either directly or indirectly).

MoDOT does not have any data documenting that existing BMPs are reducing bacteria. However, MoDOT encourages installation of particular types of BMPs when required within the watersheds that have a bacteria impairment under MCM 5 to use BMPs documented at reducing bacteria such as media filter, bioretention and retention.

Additionally, there is documentation from many sources that BMPs such as sweeping, IDDE, stormwater retention, incinerators for dead animals and other BMPs noted in our MCMs reduce bacteria to the drainage system.

4. What considerations will MoDOT take with new or modified BMPs and measurable goals due to the Iterative Process with respect to bacteria removal?

Because of these TMDLs, MoDOT intends to modify MCM 5 to further require that within the specified TMDL watersheds, structural BMPs such as media filters, bioretention and retention

should be considered and given more value since these types of BMPs have been shown in literature to greatly reduce bacteria over other BMPs. MoDOT will continue to evaluate the operational effectiveness of all its BMPs.

If continued water quality monitoring by MDNR and/or MSD shows increased bacteria levels, MoDOT will work with regulators and municipalities to find other methods to reduce bacteria.

5. Schedule with deadline on when MoDOT's SWMP will be revised to include how existing BMPs and measurable goals are reducing the TMDL's pollutant of concern (e. coli). If the revision of the SWMP is scheduled to take over one year, then MoDOT will also need to describe how they will submit a progress report of the SWMP's revision in their annual report.

MoDOT intends to revise its SWMP and submit it in conjunction with its annual report, due February 28th, 2017.

6. How current practices, structural BMPs, and other activities are consistent with the implementation actions described in the applicable TMDL Implementation Plans.

As outlined in the Implementation Plans for Fishpot Creek, Watkins Creek, Creve Coeur Creek, and Coldwater Creek, under the Point Source Implementation, it states that point sources reductions are typically implemented through discharge permits. In the case of MS4 permits, the development and implementation of the stormwater management program plan and the six required MCMs fulfill that requirement. These documents state that implementation will primarily be a continuation of existing or planned activities. Further it says the stormwater management program should minimize negative impacts to water quality/aquatics, monitor and eliminate illicit discharges and provide long-term water quality protection. MoDOT believes that we are achieving these objectives through our current program. MoDOT's drainage system accounts for 4-5% of any one of these watersheds and the existing and planned activities are expected to provide water quality protection.

If you have any questions please do not hesitate to contact me at (573) 526-6676 or Melissa Scheperle at (573) 526-6684. Thank you for considering MoDOT's position regarding meeting the assumptions and requirements for each of the TMDLs.

Sincerely,

Gayle Unruh

Gayle Unruh
Environmental and Historic Preservation Manager

Copies: Nicole Kolb-Hood – Central Office Design

STATE OF MISSOURI
Eric R. Greitens, Governor • Carol S. Comer, Acting Director
DEPARTMENT OF NATURAL RESOURCES
dnr.mo.gov

FEB 21 2017

Ms. Gayle Unruh, Environmental and Historic Preservation Manager
Missouri Department of Transportation
P.O. Box 270
Jefferson City, MO 65102-0270

RE: Missouri Department of Transportation's No Additional Controls Demonstration for Total Maximum Daily Load Attainment

Dear Ms. Unruh:

This letter is to inform you the Missouri Department of Natural Resources' Water Protection Program received the Missouri Department of Transportation's (MoDOT) Total Maximum Daily Load (TMDL) – No Additional Controls Demonstration on January 25, 2017, in accordance with Part C, Item 8 of MoDOT's Transportation Separate Storm Sewer System National Pollution Discharge Elimination System Permit Number MO-0137910. A review of MoDOT's demonstration has been conducted and the Department of Natural Resources is requesting additional information on the below items before approval is determined.

In response to Question 1 under Minimum Control Measure #1, the TMDL demonstration indicates MoDOT uses Pet Waste and No More Trash signage at a list of locations and other targeted areas as appropriate. Please describe or provide an example of other targeted areas and how MoDOT determines the appropriateness.

In response to Question 1 under Minimum Control Measure #4, the TMDL demonstration indicates MoDOT will continue to work to reduce bacteria in stormwater by maintaining Job Special Provisions for projects; however, the demonstration does not provide a description regarding Job Special Provisions. Additionally, MoDOT's Stormwater Management Plan also does not provide a description of Job Special Provisions. Please provide a description of Job Special Provisions and how bacteria are reduced if Job Special Provisions are maintained.

Additionally, this portion of the TMDL demonstration does not discuss the multitude of erosion and sediment Best Management Practices (BMPs) that MoDOT utilizes in construction projects, which are documented at several locations in MoDOT's Engineering Policy Guide. As noted in Section 8.1.2 of the Watkins Creek TMDL Implementation Plan, "Although these activities do not target E. coli directly, reduction in runoff and sediment entering Watkins Creek is expected to result in reductions of bacteria loading." Reduction in bacteria levels is also linked to erosion and sediment control in Section 5.1.2 of the Watkins Creek TMDL Implementation Plan, which states "Reduction in runoff should aid in reducing overall bacteria loading."

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

March 1, 2017

Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102

Attn: Michael Abbott

Dear Mr. Abbott,

Subject: **Permit No. MO0137910**
Part C.8 response to MDNR comments

MoDOT received MDNR's comments regarding the No Additional Controls Demonstration submittal. The following (in blue) are answers to the follow-up questions and comments in your letter dated February 21, 2017. Please review the answers and let us know if MoDOT needs to take any further action or provide additional information.

1. How are existing BMPs and measurable goals currently being implemented to reduce bacteria for each MCM?

Under **Minimum Control Measure (MCM) 1, MoDOT Community & Public Education and Outreach on Stormwater Impacts Program,** of MoDOT's TS4 permit, MoDOT is actively educating the MoDOT community and the general public it interacts with about bacteria in stormwater runoff and how everyone can help improve water quality. MoDOT achieves this through various media outlets, targeting pet owners and households in general, about proper management of pet waste. MoDOT speaks with the public at the State Fair, Earth Day events and MoDOT public meetings. The State Fair and Earth Day are annual events, whereas public meetings within the TS4 area are varied in frequency.

Public education activities that include messages related to the proper disposal of pet waste are contained in the Stormwater Brochure, which is available to the public through the internet and at public meetings, as well as through the use of the Bean Bag Toss Stormwater Game. The Bean Bag Toss Game targets behaviors, including pet waste disposal, and is mainly used during Earth Day and the State Fair.

Additionally, MoDOT uses Pet Waste and No More Trash signage at Welcome Centers, rest areas, roadside parks, truck parking areas, commuter lots and other targeted areas where

appropriate. This further reinforces the message to the traveling public about the importance of pet waste management and litter prevention. Per EPG 903.5.46 Regulatory Signs for Trash/Dumping, the NO DUMPING sign shall be erected only at locations where the MDNR has given us written notice that solid waste is being disposed of on highway right of way. NO MORE TRASH signs are only installed at commuter lots, rest areas or roadside parks. NO MORE TRASH signs are only installed along the roadway if a major liter issue has been identified and the sign is needed for enforcement purposes.

MoDOT also regularly coordinates with other MS4 communities (considered MoDOT's public) on many topics under the MS4 permit and will continue to work together in these watersheds on common issues.

Under the **MCM 2, MoDOT Community and Public Involvement Participation Program,** MoDOT continues to respond to and investigate all reports of suspected illicit discharges and improper disposal of waste through MoDOT's stormwater reporting tool and from maintenance personnel when performing other work on the MoDOT system.

The stormwater reporting tool is located on the stormwater webpage, the road concern tool, as well as being listed in the stormwater brochure. MoDOT will continue to investigate and report verified illicit discharges to the appropriate authorities immediately. Maintenance Division as well as other MoDOT personnel are trained to identify and report any suspected illicit discharges to MoDOT's stormwater specialist. Most reports are not bacteria related, but some instances of improper discharge of onsite wastewater systems or CAFOs have been reported and confirmed. Wastewater discharges are reported to the local county health departments and other discharges are reported to the Missouri Department of Natural Resources (MDNR).

Again, MoDOT coordinates with other MS4 communities (considered part of MoDOT's public) on many topics within the MS4/TS4 permit.

Under the **MCM 3, Illicit Discharge Detection and Elimination (IDDE) Program,** of MoDOT's TS4 permit, MoDOT has a large group of personnel that are on the ground daily performing routine activities. These employees are trained annually to identify and report illicit discharges on MoDOT's system. They also conduct dry weather screening of outfalls during normal operations. MoDOT has mapped its outfalls and regularly inspects bridge outfalls every 2-3 years during normal bridge inspections for pollutants including potential bacterial sources. MoDOT coordinates with local municipalities to remedy many of these situations.

Additionally, MoDOT will continue to enforce existing policies that exclude industrial and domestic waste waters on right of way (EPG 127.25.8.3.1) and system attachments by others (EPG 127.25.8.3.2).

Under **MCM 4, Construction Site Stormwater Runoff Control,** MoDOT will continue to work to reduce bacteria in stormwater by maintaining Job Special Provisions (JSPs) for projects such as paving, grinding, and dewatering, to prevent pollutants in the soil and runoff from entering adjacent waterways. MoDOT also actively works to mitigate erosion from landslides and other eroded areas to prevent sediment from entering drainages, thereby limiting the transport of bacteria in sediment.

Figure 1: EPG 806

MoDOT has pre-construction and pre-activity meetings with contractors and sub-contractors regarding erosion and sediment control prior to initiating work on projects in the Statewide Transportation Improvement Plan (STIP). Erosion and sediment control BMPs are used to keep any sediment that might contain bacteria from reaching adjacent waterways.

Job special provisions (JSPs) are revisions to the standard specifications and general provisions applicable to an individual project. They contain information covering work methods, materials, measurements, or basis of payment. The JSPs take highest precedence over all material contained in the bidding documents. Examples of JSPs that help MoDOT control runoff and therefore prevent bacteria from reaching waterbodies include the Stormwater compliance requirement, use of flocculents, control measures for diamond grinding, water quality control measures for sensitive species, and temporary stream crossing requirements. Bacteria are reduced by using JSPs such as these examples because they reduce sediment and other materials that may contain bacteria from leaving the project site. Examples are attached.

As you point out in the comment letter, MoDOT does employ a multitude of erosion and sediment control measures, not only on construction projects but also on maintenance projects that disturb the ground. These measures are required in EPG 806 where it states that locally sponsored federal aid projects performed on MoDOT right of way and using MoDOT's land disturbance permit are required to comply with MoDOT specifications and the Storm Water Pollution Prevention Plan (SWPPP). Additionally, these measures are required through the Stormwater Management Plan (SWMP) in MoDOT's TS4 permit (EPG127.29). Section 806 of the EPG outlines temporary and permanent BMPs, site inspections and BMP repair, maintenance activities (also under EPG 173 Erosion and Sediment Control for Maintenance), traffic activities, materials activities, and construction inspection guidance. These types of activities do not target E. coli directly, but as noted in the Implementation Plan for Watkins Creek, by reducing runoff and sediment entering Watkins Creek bacteria is thereby reduced. All land disturbance activities 1 acre or more are required to follow MoDOT's SWPPP as outlined in EPG 806.8. The purpose of the SWPPP is to ensure the design, implementation, management and maintenance of BMPs in order to reduce the amount of sediment and other pollutants in storm water discharges associated with the land disturbance activities;

comply with the Missouri Water Quality Standards, and ensure compliance with the terms and conditions of the general (land disturbance) permit. MoDOT's SWPPP can be found in the EPG, and on MoDOT's land disturbance website.

Examples from EPG 806.2 Roadway Design Activities include temporary and permanent sediment basins, sediment traps and Type C-berms. These types of temporary BMPs will be placed prior to clearing and grubbing operations and shall remain in place until slopes are seeded and mulched or rock lining has been placed, when appropriate. These structures trap and store sediment to prevent the sediment from reaching a waterbody. The EPG also outlines when sediment is to be removed from these structures by providing an approximate quantity. Examples from EPG 806.3 Construction Activities also include sediment basins, and Type C-berms. These shall also remain in service until all disturbed areas draining into the structure have been stabilized. Removed sediment and material shall be disposed of in locations where sediment will not again erode into natural waterways. Inspections and repair are outlined in the EPG and SWPPP. Again, controls also apply to activities outside of the actual project to include maintenance and pre-project planning such as core drilling and archeological investigations.

As written in the Coldwater Creek, Watkins, and Creve Coeur Creek TMDLs under 8.1.2 MS4 Regulated MS4 Urban Runoff, "reductions in runoff and sediment entering Coldwater Creek is also expected to result in reductions of bacteria loading".

Under **MCM 5, Post-Construction Stormwater Management in New Development and Redevelopment,** MoDOT requires consideration of permanent post-construction best management practices (BMPs) when new or redevelopment projects occur in the TS4 coverage area. See MoDOT's EPG for definitions of new and redevelopment. MoDOT also requires local public agency (LPA) projects to comply with this policy if the project is on MoDOT right of way and within a regulated MS4 community (EPG 136). Again, this reduces sediments that could carry bacteria.

Describe how MoDOT "considers" BMPs. Under EPG 127.29 if a project meets the criteria for new or redevelopment (within the coverage area, 1 acre or more of land disturbance, and meets the definitions) post-construction, permanent BMPs must be considered. Consideration means the designer shall work with the stormwater specialist to consider site constraints and opportunities in the project area to treat water quality and/or quantity of stormwater coming off the roadway. This includes determining if there are right of way or utility constraints that would prevent constructing or maintaining a permanent BMP adjacent to the roadway and conversely, determining if there are partnering opportunities with adjacent regulated MS4s. Examples of commonly used BMPs are provided in the EPG but there is no requirement currently to consider particular BMPs. It was proposed within this letter under question 4 "What considerations will MoDOT take with new or modified BMPs and measurable goals due to the Iterative Process with respect to bacteria removal?", that MoDOT proposes to modify MCM 5 and the EPG to further require that within the specified TMDL watersheds, specific structural BMPs such as media filters, bioretention and retention should be considered first and given more value since these types of BMPs have been shown in literature to greatly reduce bacteria over other BMPs. The EPG has not been revised at this point to reference this

requirement. Once the "No Additional Controls Demonstration" has been completed and approved, MoDOT will revise the EPG (127.29).

The comment letter also asked about existing permanent, post-construction BMPs in the TMDL watersheds. MoDOT currently has 13 BMPs in the Creve Coeur Creek watershed and 4 BMPs in the Fishpot Creek watershed. These vary from typical detention basins to hybrid ditches and underground detention systems for flood control. See exhibits 1 and 2 for locations with these watersheds.

Under **MCM 6, Pollution Prevention and Good Housekeeping,** MoDOT requires that maintenance personnel are trained in illicit discharge recognition and reporting at least every other year with a refresher course in the off year. This includes looking for sewage and waste discharged onto right of way. MoDOT is also creating a training program specifically targeting this MCM for staff. It will be available this spring. MoDOT maintenance sheds are also equipped with animal incinerators in urban areas to dispose of road kill thereby removing this bacteria source from the roadway. Street sweeping is also used in municipalities and on MoDOT lots to reduce sediment, salt, bacteria and other constituents from entering the drainage system. Sweepings are considered a solid waste and are disposed of accordingly. Sweeping or brooming to remove dirt and debris from bridges is also required to prevent entry into waters of the state.

2. Any data or other information supporting that BMPs are reducing bacteria (e. coli).

MoDOT is not currently conducting water quality testing to determine if structural or non-structural BMPs are reducing bacteria. It is assumed that if MoDOT is removing dead animals from the roadway and incinerating them, there is a reduction in bacteria in our system.

3. Any data documenting existing BMPs reduce bacteria (either directly or indirectly).

MoDOT does not have any data documenting that existing BMPs are reducing bacteria. However, MoDOT encourages installation of particular types of BMPs when required within the watersheds that have a bacteria impairment under MCM 5 to use BMPs documented at reducing bacteria such as media filter, bioretention and retention.

Additionally, there is documentation from many sources that BMPs such as sweeping, IDDE, stormwater retention, incinerators for dead animals and other BMPs noted in our MCMs reduce bacteria to the drainage system.

4. What considerations will MoDOT take with new or modified BMPs and measurable goals due to the Iterative Process with respect to bacteria removal?

Because of these TMDLs, MoDOT intends to modify MCM 5 to further require that within the specified TMDL watersheds, structural BMPs such as media filters, bioretention and retention should be considered and given more value since these types of BMPs have been shown in literature to greatly reduce bacteria over other BMPs. MoDOT will continue to evaluate the operational effectiveness of all its BMPs.

If continued water quality monitoring by MDNR and/or MSD shows increased bacteria levels, MoDOT will work with regulators and municipalities to find other methods to reduce bacteria.

5. Schedule with deadline on when MoDOT's SWMP will be revised to include how existing BMPs and measurable goals are reducing the TMDL's pollutant of concern (e. coli). If the revision of the SWMP is scheduled to take over one year, then MoDOT will also need to describe how they will submit a progress report of the SWMP's revision in their annual report.

MoDOT intends to revise its SWMP and submit it in conjunction with its annual report, due February 28th, 2017.

6. How current practices, structural BMPs, and other activities are consistent with the implementation actions described in the applicable TMDL Implementation Plans.

As outlined in the Implementation Plans for Fishpot Creek, Watkins Creek, Creve Coeur Creek, and Coldwater Creek, under the Point Source Implementation, it states that point sources reductions are typically implemented through discharge permits. "In the case of MS4 permits, this includes development and implementation of a stormwater management program plan that addresses the six required minimum control measures and other applicable requirements" as stated in the Coldwater Creek TMDL Implementation Plan. Further, under 8.1.2 MS4 Regulated Urban Runoff, it states that "The BMPs and programs developed by the Missouri Department of Transportation and the Metropolitan St. Louis Sewer District and its co-permittees to meet these permit requirements are expected to result in reductions of bacteria loading from the MS4 regulated area". These TMDL documents state that implementation will primarily be a continuation of existing or planned activities. Further it says the stormwater management program should minimize negative impacts to water quality/aquatics, monitor and eliminate illicit discharges and provide long-term water quality protection. MoDOT believes that we are achieving these objectives through our current program. MoDOT's drainage system accounts for 4-5% of any one of these watersheds and the existing and planned activities are expected to provide water quality protection.

If you have any questions please do not hesitate to contact me at (573) 526-6676 or Melissa Scheperle at (573) 526-6684. Thank you for considering MoDOT's position regarding meeting the assumptions and requirements for each of the TMDLs.

Sincerely,

Buck Brooks for Gayle Unruh

Gayle Unruh
Environmental and Historic Preservation Manager

Copies: Nicole Kolb-Hood – Central Office Design

Exhibit 1: JSP Examples

SLURRY AND RESIDUE PRODUCED DURING SURFACE TREATMENT

1.0 Description. This work covers the requirements for controlling residue or slurry produced by milling, grinding, planning, grooving or other methods of surface treatments on new or existing PCCP and bridge decks in addition to Section 622.

2.0 Construction Requirements. The following shall be considered the minimum requirements for performing this work within the project limits.

2.1 The contractor shall submit to the Engineer for approval in writing prior to the pre-construction meeting, the best management practices (BMP's) to be used to protect the environment, including the method of disposal of the residue whether on right of way or off-site.

2.2 When slurry is dispersed on the right of way, BMP's shall be installed to keep slurry or residue from entering paved ditches or structures discharging within the areas restricted by Section 622.303.8.6, from entering any waterways or from leaving the right of way.

2.3 Upon approval of the contractor's BMP and residue disposal plan and prior to the contractor beginning surface treatment operations, the Engineer will identify slurry or residue "no discharge zones". .

2.4 Operations may be suspended by the Engineer during periods of rainfall or during freezing temperatures.

2.5 Basis of Payment. No direct payment for slurry or residue control requirements for BMP's will be made. Compliance with this specification along with the cost of all materials, labor and equipment necessary for the surface treatment work shall be included in and completely covered by the unit price bid for each of the items of work for surface treatment included in contract.

WATER QUALITY CONTROL MEASURES IN CONSIDERATION OF SENSITIVE SPECIES

1.0 Description. The Gasconade River serves as habitat for sensitive species, some of which are federally listed. Although Bridge A3760 over the Gasconade is excepted from the project, to avoid any negative impacts to these species, water quality shall be protected from the discharged slurry from diamond grinding.

1.1 Material, water or residue shall not be allowed to enter the stream or floodplain. This shall include, but is not limited to, slurry from diamond grinding. No material shall be discharged within 1000 feet of Bridge A3760.

1.2 Erosion and sediment controls must be utilized to ensure no runoff or material enters the Gasconade from incidental roadway construction. Soil disturbance should be avoided in the area of Bridge A3760.

2.0 Staging. No staging, storage, or refueling of equipment shall be allowed within 100 feet of Bridge A3760.

3.0 Basis of Payment. No direct payment will be made to the Contractor to recover the cost of labor, materials, or equipment required to comply with the above requirements.

V. TEMPORARY WORKPAD/CROSSING

1.0 Description. This specification covers a temporary workpad/crossing built to facilitate the placement of the contractor's equipment in a stream.

2.0 Construction Requirements. The contractor shall be responsible for the design, installation, maintenance, removal of the temporary workpad/crossing and any structures installed for the construction of the temporary workpad/crossing.

2.1 Rock furnished for temporary workpad/crossing shall be in accordance with Sec. 303.2.

2.2 The fill material for the workpad/crossing shall be constructed using clean rock fill.

2.3 The contractor shall determine the adequate number of pipes to handle drainage and maintain near normal flows.

2.4 Pipes shall be anchored to prevent being swept from the project area during high flows.

3.0 Basis of Payment. No direct pay will be made for any material or labor involved with the design, installation, maintenance or removal of temporary workpad/crossing. The contractor shall be responsible for all costs, including any damage and all penalties.

WORK IN CLOSE PROXIMITY TO STREAM REQUIREMENTS

1.0 The Contractor shall be aware that a headwater stream (tributary to Lost Creek) parallels Rt. 43 and requires notification to the Corps of Engineer if any work is to occur in the stream. MoDOT has determined that the pavement and safety improvements can be constructed without any permanent impact to the stream, or any other method of construction requiring work in the stream; therefore, MoDOT has not pursued or obtained a permit.

1.1 The Contractor shall have best management practices (BMPs) in place before work commences to ensure no construction material or impacts will occur to the stream. No materials, equipment, etc. should be placed in the stream.

2.0 If the Contractor determines that work in the stream is necessary, it shall be the responsibility of the contractor to obtain the proper permits from the Corps of Engineers. Any permit obtained shall be provided to MoDOT prior to beginning in stream operations.

2.1 No additional time will be added to the contract for the contractor to obtain any permits.

3.0 There will be no direct payment for compliance with this special provision.

AA. FLOCCULANTS

1.0 Construction Requirements. Flocculants will be used at each of the sediment basin locations and at any locations where water might enter adjacent ponds. The manufacturer's rep is required on site for initial installation. Install and maintain per manufacturers recommendations. This includes matching the system to the amount of flow. Flocculant system to be designed based on soil samples obtained from the on-site soil locations. Replacement bag/checks will be paid for at the contract unit price.

2.0 Basis of Payment. Payment for flocculants will be completely covered by the contract unit price for Item No. 8069902 "Flocculants" per each.

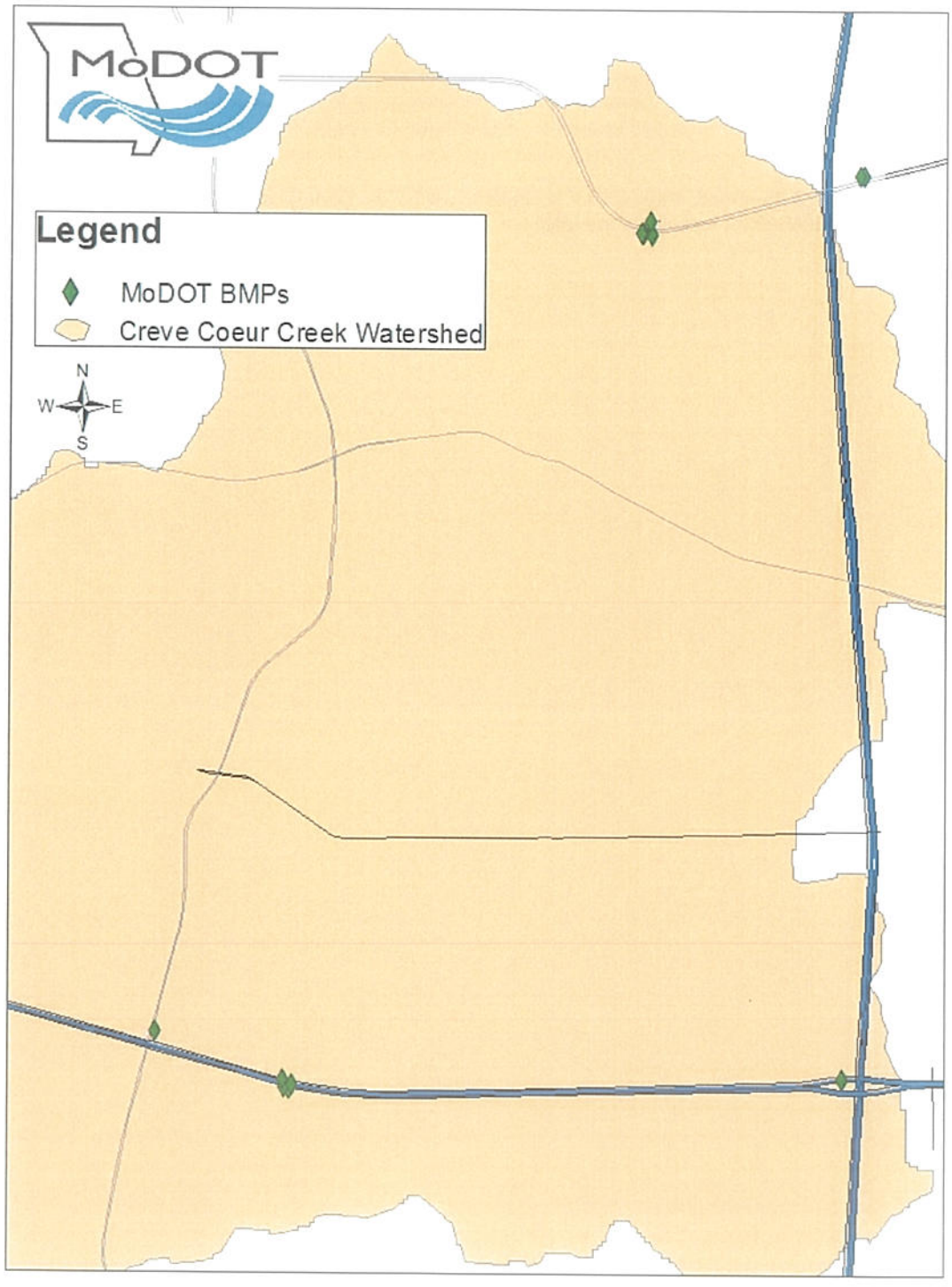


Exhibit 2: Creve Coeur Creek Watershed.

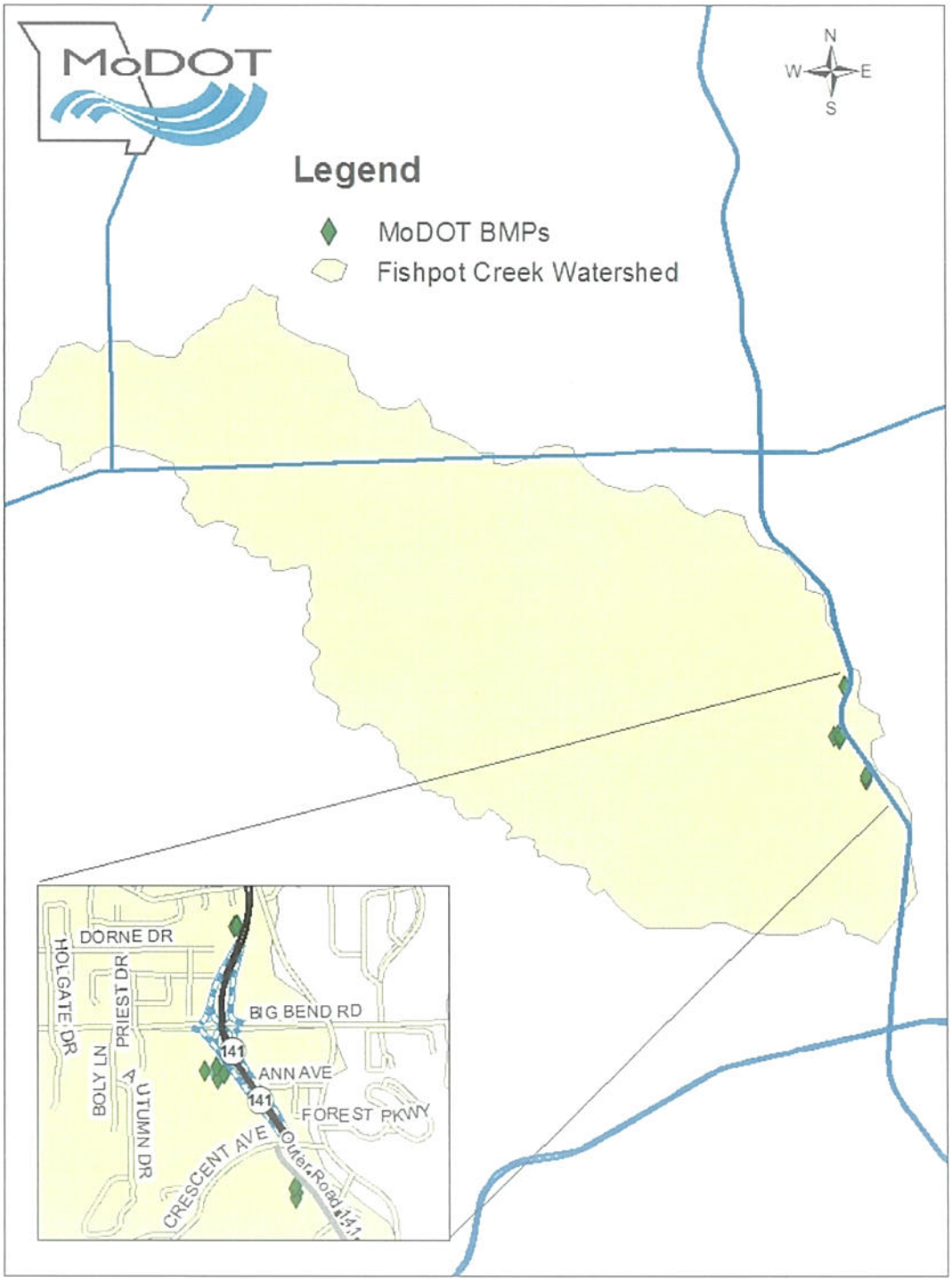


Exhibit 3: Fishpot Creek Watershed.

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

MAR 09 2017

Ms. Gayle Unruh, Manager
Environmental and Historic Preservation
Missouri Department of Transportation
P.O. Box 270
Jefferson City, MO 65102-0270

RE: Missouri Department of Transportation's No Additional Controls Demonstration for Total Maximum Daily Load Attainment

Dear Ms. Unruh:

This letter is to inform you the Missouri Department of Natural Resources' Water Protection Program received the Missouri Department of Transportation's (MoDOT) revised Total Maximum Daily Load (TMDL) – No Additional Controls Demonstration on March 6, 2017, in accordance with MoDOT's Transportation Separate Storm Sewer System Permit MO0137910. A review of MoDOT's revised Demonstration has been conducted and has been determined appropriate. Therefore, MoDOT's TMDL Demonstration is approved.

If you have any questions regarding this correspondence or if additional time is needed for your response, please feel free to contact me by email at michael.abbott@dnr.mo.gov, by phone at 573-526-1139, or by mail at the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

Michael Abbott, MS4 Program Coordinator
Operating Permits Section

MA/pc